Community Health Network

University of Indianapolis

Ninth Annual **Multidisciplinary Scholarly Activity Symposium**

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Ninth Annual
Multidisciplinary Scholarly Activity
Symposium Proceedings
2024

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KEYNOTE SPEAKER

Patrick McGill, MD, MBA

Patrick McGill serves as the Executive Vice President, Chief Transformation Officer. With over 20 years experience in healthcare, he leads Information Technology, Network Analytics, Clinical & Nursing Informatics, Transformation Services, Patient Experience Analytics, Business Continuity Management and Regulatory Reporting. Prior to his CTO role, he served as the Chief Analytics Officer developing the Network Analytics Center of Excellence. In addition, he has served as the Senior Vice President for Clinical Strategy and Vice President for Clinical Transformation. Dr. McGill has special interests in digital transformation, population health, value-based care, innovative payment models for healthcare, process automation, advanced clinical analytics, clinical decision support, workflow efficiency, and waste reduction.

Under his leadership, Community Health Network has received numerous awards and recognition. A few include being named Most Wired each of the last 3 years and the 2020 Flywheel Award at the Health Analytics Summit. Dr. McGill was named to the Becker's list of top 30 most inspiring Chief Transformation Officers in 2022 and was a finalist for the 2021 Chief Technology Officer of the Year presented by the Indianapolis Business Journal.

Born and raised outside of Atlanta, Georgia, Dr. McGill attended the University of Georgia in Athens, Georgia, graduating m*agna cum laude* with a Bachelor of Science in Chemistry. He received his medical degree from the Medical College of Georgia in Augusta, Georgia and completed his Family Medicine Residency at Ball Memorial Hospital in Muncie, Indiana. He completed the Advisory Board Fellowship program in 2020 and holds a Master of Business Administration degree from the University of Southern Indiana. Before joining Community Physician Network in 2010, he practiced Family Medicine in Pendleton, Indiana, and has experience in Emergency and Urgent Care medicine. He is board certified in Family Medicine and continues clinical medicine at South Indy Family Practice.

POSTER PRESENTATIONS

Venous Thromboembolism: a Rare Complication of Alpha-1-Antitrypsin Deficiency

Lindsey N. Jensen, DO, Alexa Niceley, OMS-III, Courtney McNeill, DO
Community Health Network-Osteopathic Family Medicine Residency Program

Introduction:

- Alpha-1 antitrypsin deficiency (AATD) is an autosomal codominant inherited disorder with several clinical manifestations including lung and liver disease
- Approximately 3 million people worldwide have allele combos associated with severe deficiency of AAT, with the PI*ZZ phenotype being the most common[1]
- A rare and less well-established complication of AATD in patients with the PI*ZZ phenotype is recurrent venous thromboembolism (VTE)[2]
- This case is of a 41-year-old male who presented with unexplained VTE and a delayed diagnosis of AATD with PI*ZZ phenotype
- The case exemplifies the importance for clinicians to maintain a high index of suspicion for AATD in a young patient with recurrent VTE to prevent delays in diagnosis and treatment

Case Presentation:

HPI:

- A 41-year-old male, with PMH of nicotine and alcohol dependency, who presented to PCP with a 4-week history of right lower extremity swelling/pain
- He additionally complained of dyspnea that started 5 years ago and has worsened over the past 6 months
- Review of systems otherwise negative

Social History:

- Consumes 6 shots of liquor and 1 beer per day for 20 years
- Smokes ¼ ppd of cigarettes for 20 years

Vital Signs:

- Afebrile, BP 170s/100s, HR 120-140, SpO2 94% RA

Exam:

- Tachycardia, diffuse mild end expiratory wheezing, bilateral lower extremity swelling with pitting edema, bilateral distal pulses +2/4

Imaging:

- RLE ultrasound revealed extensive DVT involving all visualized deep veins
- The patient was sent to the ER for anticoagulation where he was subsequently found to have bilateral pulmonary embolism on CTA

Treatment:

- The patient underwent thrombectomy for the RLE DVT and was discharged shortly after on Eliquis
- He continued to have clotting events despite anticoagulation, as well as persistent dyspnea over the following months prompting further investigation by PCP and various specialists

Differential Diagnosis:

Recurrent VTE and Dyspnea on Exertion

- Thrombophilia
- Lung Cancer
- COVID-19 Infection
- Myocardial Infarction
- Heart Failure Exacerbation
- COPD Exacerbation
- Cirrhosis
- Anemia

Labs and Imaging

Hematologic:

- Repeat RLE duplex: extensive occlusive and nearly occlusive thrombus throughout entirety of RLE (requiring mechanical thrombectomy)
- CBC: mild erythrocytosis
- Hypercoagulable workup normal

Cardiac:

- EKG: left atrial deviation
- Echocardiogram: normal ejection fracture, systolic, diastolic function

Gastrointestinal:

- RUQ US: evidence of cirrhosis

Pulmonary:

- Negative for COVID-19, no history of COVID-19 diagnosis
- CXR: pulmonary emphysema
- CTA: pulmonary emphysema
- PFT's: severe obstructive ventilatory defect with FEV1 39%, severe air trapping and moderately decreased diffusion capacity
- Alpha-1-Antitrypsin deficiency positive, PI*ZZ phenotype

Final Diagnosis:

Alpha-1-Antitrypsin Deficiency

Treatment/Outcome:

- Over the next 6 months, the patient suffered recurrent lower extremity VTE and stent occlusion despite anticoagulation, requiring multiple thrombectomies and venous re-stenting
- During this time, the patient experienced ongoing dyspnea on exertion, temporarily relieved by osteopathic manipulative treatment (OMT), and unrelieved by inhaler trials to treat emphysema
- A diagnosis of AATD was made 7 months after initial evaluation because of the rare symptomatology of the patient's disease (image 1)
- Treatment with lifelong anticoagulation is indicated for this patient
- The patient was started on Prolastin injections to mitigate the systemic effects of AATD

Discussion:

- VTE is a rare and under-established complication of the AATD PI*ZZ phenotype[2]
- Previous case reports have linked a diagnosis of AATD and a history of pulmonary embolism, however, there are no reports that comment on the recurrence of thrombotic events and the impact on quality of life for patients, particularly at this young age[3,4]
- Although emphysema and cirrhosis are the most common systemic manifestations in the setting of AATD, this case highlights that clinicians should maintain a high index of suspicion for AATD in young patients with unexplained and recurrent unprovoked clotting events, simultaneously considering age, social history, and past medical history
- Increased frequency of follow-up with PCP could have hastened diagnosis to initiate AATD testing and pulmonology referral
- OMT provided patient mild relief of dyspnea symptoms pending diagnosis and treatment
- This case report aims to bring awareness to this rare complication of AATD, and to the clinical suspicion necessary for timely diagnosis, treatment, and prevention to improve patients' quality of life

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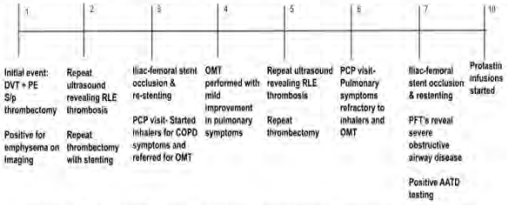

Image 1: Timeline of events by month leading to diagnosis and treatment

Utilizing Longitudinal Teams to Teach Quality Improvement for Blood Pressure in Diabetic Patients in a Family Medicine Residency Patient-Centered Medical Home

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Community Health Network

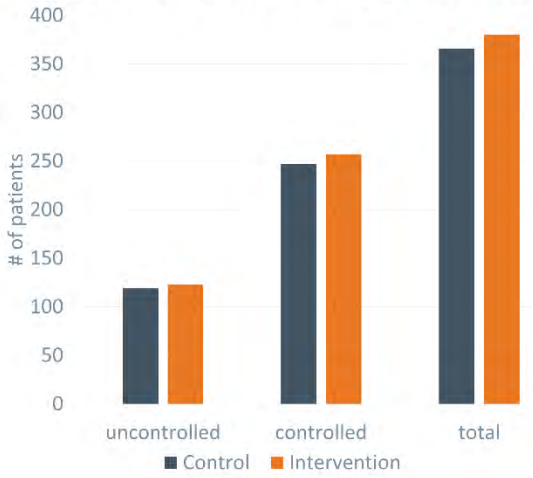
Introduction

- 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 75% of our clinic's diabetic patients with a blood pressure of <140/<90.

Methods

- Patients screened for diabetes
- Percentage of patients with bp <140/<90 was documented for each provider
- Each provider ran report screening for patients with elevated bp
- Message sent to schedule office visit for patients needing blood pressure management
- Education provided to recheck blood pressure and schedule follow up if not at goal
- Percentage of patients with elevated bp was assessed for each provider after 6 months

Diabetic patients with hypertension



Discussion

A large risk factor for diabetic complications is compliance and proper follow up. We feel that by setting aside time, as providers, to find those that are willing to make changes and follow interventions but are "falling through the cracks" due to possible scheduling conflicts, missed appointments, etc. that we will have a larger impact on our diabetic population. Ideally, residents will use these skills moving forward and implement quality improvements later in their careers.

Discussion continued

Results

- Increase in controlled HTN by 10 patients or 4%
- Increase in total patients by 14 or 4%
- Increase in total percent controlled by 1% to 68%

Limitations

- Patients were reassigned to different providers during the study
- Method for measuring metrics changed in the EMR
- Inconsistency with provider follow up and buy-in
- Unclear into which group new patients were added

Future plans

Going forward, we plan to continue utilizing longitudinal teams to teach patient-centered quality improvement by building blocks into each physician's schedule to run metric reports and reach out to patients to schedule appropriate follow up. Our team plans to focus on improving our patients' diabetic eye exams next.

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To be, or not tibia: A Case Report

Andrew Jeon, DO, Daniel Ordaz, MD, and Holly Wheeler, DO
Department of Sports Medicine Specialty Services

Case History

A 21 year-old female runner presented to the clinic for right mid-shin pain associated with running. There was no clear inciting event however had had worsening of this pain for the last month. One recent, particularly difficult, workout did flare her symptoms drastically. She has had normal menses without history of stress injuries nor fractures and did not report avoiding any food groups in her diet. Initial X-ray showed a small horizontal linear lucency in the mid-tibia concerning for a fracture. A subsequent MRI identified a grade II bone stress injury. At this time, the patient was advised to proceed conservatively without running or lower body weightlifting. She returned 3 weeks later with minimal improvement. She had not been able to wear the boot consistently due to pain associated with direct contact. A repeat X-ray at this time showed a more apparent mid-tibia lucency.

Physical Exam

Inspection:
- no overlying erythema nor lesions

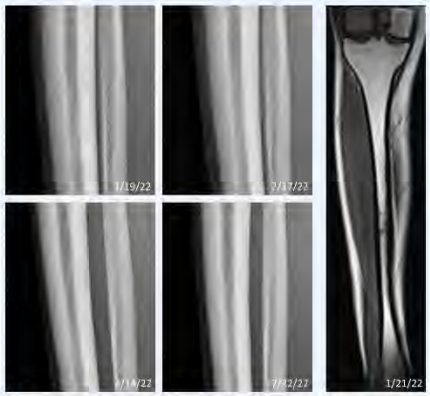
Palpation:
- discrete tenderness of mid anterior tibial ridge
- tenderness of medial tibial surface

Observation:
- pain with weightbearing, walking
- hesitant single-leg hop

Differential Diagnoses

1. Anterior tibial stress syndrome
2. Medial tibial stress syndrome
3. Posterior tibialis tendinopathy
4. Posterior tibialis muscle strain
5. Periostitis

Imaging



XR tibia-fibula right AP and lateral:
- small horizontal linear lucency in the mid-tibial shaft concerning for a fracture

MRI tibia-fibula right without contrast:
- mild periosteal edema and focal bone marrow edema signal at the mid diaphyseal tibia
- mild subtle T1 hypointense signal alteration at the site of bone marrow edema

Final Diagnosis

Anterior tibial shaft stress fracture; ie, DBL

Treatment

Patient elected trial of conservative management after discussion of risks and benefits of surgical and conservative options.
- cessation of running; substituted with swimming, pool running, biking, elliptical as tolerated
- AlterG return-to-running progression

Discussion

Anterior tibial shaft stress fractures are well known to runners, jumpers, and dancers. It is an overuse injury caused by repetitive stress leading to microfractures known for their high risk of nonunion or secondary complete fracture. They are commonly treated with intramedullary tibial nailing, sometimes even as first-line management. Due to this poor prognosis, the X-ray finding associated with anterior tibial shaft stress fracture has earned the name, the “dreaded black line”, which describes a locally thickened cortex with a V-shaped radiolucent defect of the anterior tibial cortex. It is thought that these occur due to the lag in osteoblastic activity after osteoclastic activity related to bone loading and strain during exercise. Given this pathophysiology, activity modification and therapy programs involving graduated running progression may be a sounder principle of management in less severe cases.

Outcome / Follow-Up

Subsequent visits showed improvements in X-ray imaging as well as in activities of daily living and tolerance of increasing difficulty of workouts such as swimming, pool runs, biking and elliptical exercises. She has been able to work through Alter-G treadmill return-to-running progression without worsening of her pain. This case demonstrates one example of a runner with tibial shaft stress fracture with imaging evidence of the "dreaded black line" returning to running without operative management via intramedullary tibial nailing.

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Honoring Patient Wishes by Utilization of Healthcare Representative Forms in Advanced Care Planning Discussion

Lindsey N. Jensen, DO, Courtney McNeill, DO, Brittany Simpson, DO, Jacklyn Kiefer, DO, Elyse Oney, DO, Lucas Gelmini, DO, Nicole Sickle, RN, Jennifer Buitendorp, MA, Christina Boner, MA, Layla Ebeyer

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PREPARE for your care

Background

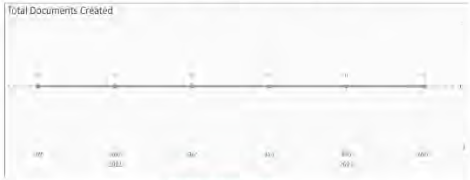
- Previous studies demonstrate that a lack of documentation or ambiguity of patient wishes can lead to life-prolonging and invasive treatments[1].
- The Healthcare Representative (HCR) form is a one-page document that allows a patient to name the individual they want to make decisions about their care in the case where the patient cannot consent to healthcare[2].
- **The primary aim was to have resident physicians at CSOFM clinic increase documentation of HCR forms for patients 50 years or older in their medical record by 5% in 6 months.**

Methods

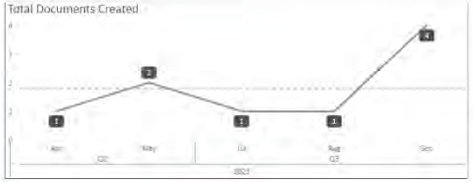
- **Intervention:**
  - A presentation to residents discussing advanced care planning
  - An informational flyer concerning the HCR form distributed to all eligible patients at new patient visit and annual physicals
  - Information session to incoming interns
  - Posted informational flyers in exam rooms
  - Multiple verbal and written reminders to physicians to complete HCR forms
- Data was collected for 6 months during the intervention time frame and compared to the number of completed forms by residents 6 months before.

Results

- There were 0 HCR forms created by CSOFM residents and uploaded to VYNCA in the 6 months prior to the study and zero qualifying patients with this form filled out.
- During the 6 months of intervention, there were 9 HCR forms created by residents at CSOFM residency and uploaded to VYNCA. **This resulted in 1.3% of patients over the age of 50 seen by CSOFM residents with a HCR form on file.**
  - 7 HCR forms were completed by senior residents and 2 forms were completed by interns.
  - There was a notable uptick in completed HCR forms in the last month of the study.



Before Intervention



During Intervention

Discussion

- The 1.3% increase during intervention was less than the initial aim of 5%.
- **Challenges:**
  - Technological glitches in the VYNCA system leading to potential collection error
  - Time constraint of office visit to complete the form and other patient concerns
- The last month of the study had the largest number of HCR forms completed.
  - Why? This could be attributed to increased confidence of residents with more exposure to HCR forms over time[3] or increased patient engagement after posting the educational flyers in patient exam rooms.
- 22% were completed by interns after the informational presentation; therefore, early exposure in training to advance care planning education may improve the HCR form completion.
- **Future directions**: In the CSOFM residency clinic, educational flyers continue to be passed out at annual physicals and new patient visits, and these flyers are posted in all patient exam rooms. Clinic social workers continue to meet with patients routinely to discuss HCR forms. We will continue these strategies as standard for the practice.

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An approach to improving compliance of yearly diabetic eye exams

Andrew Jeon, DO; Holly Wheeler, DO; Benjamin Abratigue, DO;
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Introduction

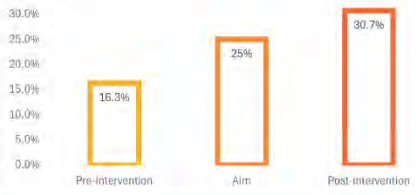
Diabetic retinopathy is a leading cause of bilateral eye blindness in American adults. Meta-analyses show the number of visual blindness and impairment due to diabetic retinopathy globally has been increasing significantly in the past few decades. As it is a preventable adverse outcome of the diabetes disease process, it was theorized that thorough patient education and reminders can help reduce the risk of diabetic retinopathy. Our aim was to increase the percentage of documented eye exams from 16.3% of diabetic patients at Community South Osteopathic Family Medicine (CSOFM) clinic to 25% by February 29, 2024.

Methods

- *10/01/2023*
- Infographic flyer (see *figure 2*) posted in waiting room
- Screening eye exam recommended in appointment
- After-visit summary (AVS) reminder is provided
- Message sent to front office marked for one month
- Reminder phone calls made to patients
- *02/29/2024*

Results

Figure 1.



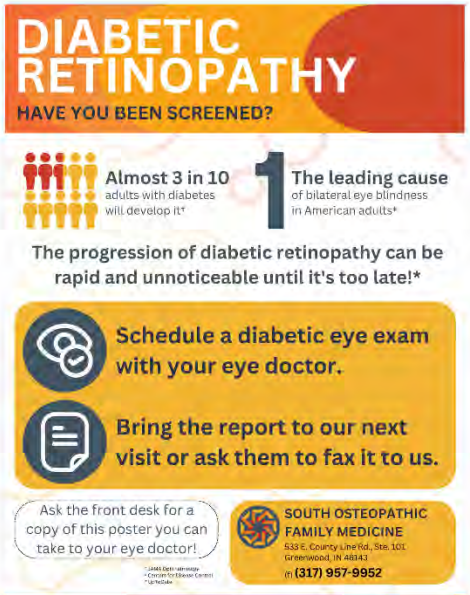


Figure 2. Diabetic retinopathy infographic poster

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Discussion

Diabetic eye exams are an important component in the care of our patients with diabetes. While components of all other diabetic metric data are directly managed through our office, the eye exam is notably the only portion that is not. For this reason, the diabetic eye exam metric data has historically been a difficult metric to upkeep. A needs assessment was performed, followed by discussions with front office and pharmacy staff, to pinpoint problematic processes.

Firstly, the patient may forget to go to the eye doctor after their diabetic follow-up appointment. Secondly, some patients reported went to get an eye exam, but did not specify that they needed a "diabetic eye exam". Thirdly, the patient and/or the ophthalmologists'/optometrists' offices may not know how to send the exam report back to our office.

While the improvement in our metric data was substantial, there are some factors to consider. Sometime during our data collection phase, Epic's metric data page was exchanged, and the visual board seen in became obsolete. The post-intervention data had to be manually calculated and the pre-intervention data was manually recalculated to confirm that it was the same. However, there were still anecdotal evidence of the new system having many errors in its reports. Also, with a busy clinic schedule there was no guarantee that every resident physician was following the instructions for every diabetic follow-up appointment.

To continue improving this process, future studies could employ a few additional actions during the data collection phase. Steps should be taken to ensure that the same method will be used for data collection pre- and post-intervention. Reminders to resident physicians should be sent more frequently. Outreach to local ophthalmologists'/optometrists' offices to ensure proper transmission of information is yet another option.

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School-Aged Children Sleep Deficits and Correlated Risk for Elevated Blood Pressure

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Community East Family Medicine Residency, Community Health Network, Indianapolis, IN

Background

Inadequate sleep amounts have been correlated to several conditions in adult populations such as high blood pressure, kidney disease, diabetes, stroke, obesity, and depression (NIH, 2022). To qualify for adequate sleep, adults need at least 7 hours of sleep, but adequate sleep duration varies in younger generations. School-aged children (ages 6-12 years old) need approximately 9-12 hours of sleep for example.

Per AAFP, hypertension for pediatric patients is >95th blood pressure for three readings for a patient's age and gender.

Objective

As per AASM, data is limited on pediatric sleep. This study is designed to evaluate younger populations' risk for elevated blood pressures in relation to inadequate sleep duration.

Given the limited information of sleep's importance on development, this study is to try and establish a correlation between inadequate sleep amounts and elevated blood pressures.

Data Collected

	Elevated BP	Normal BP
Inadq Sleep	12	6
Adq Sleep	9	33

Methods

A retrospective case analyses of 60 School-Aged Children (ages 6-12 years old) were identified from Dr. Klem's patient panel. Patients were identified and refined on two criteria, blood pressure readings and sleep amount. Sleep amounts were obtained from routine Well Child Encounters from either Parents/Guardians or the patient. Blood Pressures were obtained by support staff. Patients were refined into adequate sleep (9-12 hours) or inadequate sleep (<9 hours) and normal blood pressure (<95th percentile) or elevated blood pressure (>95th percentile). Data collected had Standard deviation comparing adequate sleep with and without elevated blood pressures and inadequate sleep with and without elevated blood pressures. Patients with pre-disposing conditions for elevated blood pressures were excluded.

Results

- **Standard deviation did not demonstrate clinical differences between Inadequate Sleep and Adequate Sleep in Elevated Blood Pressure Readings.**
- **Estimated two standard deviations was 4.24, with p>0.05**

Discussion

Current studies suggest there exists a relation between inadequate sleep amounts and elevated blood pressures, but current data collected demonstrates no clinical difference between elevated blood pressures and inadequate or adequate sleep amounts of children in ages 6-12 years old.

A limiting factor is the power and size of this study. More data points collected could have limited confounding variables. Such confounding variables would include reporting issues of sleep amounts, inaccurate blood pressure readings on subjects, additional sources of undiagnosed causes of elevated blood pressure, etc.

Ultimately, more data would need to be collected to verify true correlation between sleep amounts and elevated blood pressures. In addition, it verifies the need for continued evaluation of sleep and blood pressures in children at every annual encounter to allow for further prevention and care of patients.

Disclosure

Authors of this study have nothing to disclose.

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Cerebral Amyloid Angiopathy is Associated with Executive Dysfunction and Mild Cognitive Impairment

Erin Becker, MD; Vijai Kumar Dharla, MD; Ilma Chowdhury, DO; Mackenzie Budd, OMS-III; Peter Karalis, MD

Introduction

- Cerebrovascular insults have been documented as being associated with the development of various neuropsychiatric symptoms, including mania.
- Several cases of mania symptoms following stroke have been documented in the literature.[1,2]
- The literature notes that mania in the setting of stroke has been managed with typical mania treatments, including mood stabilizers, antipsychotics, and benzodiazepenes.[2]
- While mania immediately following a stoke has been documented before, there are not many known cases of mania in the setting of chronic cerebrovascular changes, such as suspected cerebral amyloid angiopathy.
- This report details a case in which a patient presented with mania in the setting of cerebral amyloid angiopathy and hypertension, and improvement was noted only after normotension was achieved.

Case Presentation

- 52-year-old male with history of hemorrhagic stroke three years prior secondary to cerebral amyloid angiopathy, who presented with concern for altered mental status and hypertensive urgency (up to 188/110) for 2 weeks. Symptoms included emotional lability, personality change, and sleeplessness, which were similar to symptoms of his prior stroke. **No psychiatric history.**
- MRI showed "extensive prior remote parenchymal hemorrhages suggesting changes of amyloid angiopathy" but no new stroke, mass, or bleed.
- Patient's symptoms were consistent with a manic episode; initially addressed with Depakote and Seroquel. This did not result in resolution of manic symptoms, but after his blood pressures were better controlled, patient improved and was discharged.

Management and Outcome

- Patient initially started on Seroquel by medicine to aid with sleep, without change. Psychiatry consulted and patient noted to be well oriented but tangential, euphoric, distractible and sleepless
- There was no noted change in presentation with stabilization of BPs initially; manic symptoms persisted despite titration of Seroquel to 300 mg. Depakote added with only mild improvement; temazepam added to help with sleep but patient became overly somnolent.
- Depakote dose eventually lowered due to thrombocytopenia and hyperammonemia; patient medically stabilized and sent to inpatient psychiatric unit
- Patient eventually required hydralazine, nifedipine, lisinopril, and hydrochlorothiazide to achieve normotension, at which point symptoms stabilized enough for discharge

Discussion

- While cerebrovascular insults can have a myriad of different presentations, providers should always evaluate for new-onset mood disorders. Early recognition of these symptoms can help direct appropriate management and improve prognosis.
- New-onset manic symptoms are seen in patients with "right hemispheric lesions causing a dysfunction in the ventral limbic circuit that involves the right orbitofrontal and basotemporal cortices, dorsomedial thalamic nucleus and head of the caudate nucleus."[1] Although cases are rare, patients with post stroke mania are typically male, without personal or family history of psychiatric disorder, and without subcortical atrophy, but with at least 1 vascular risk factor. Other organic factors like drug interactions, infections, metabolic changes, neoplasms, or exposure to toxins should all be ruled out first.[1]
- Previous cases of post-stroke mania presented with elevated mood, pressured speech, flight of ideas, grandiosity and insomnia, all of which began either immediately or within the first 2 years after the stroke. Especially in the elderly, mania with organic etiology can look similarly to delirium and cognitive impairment.[3]
- Significant improvement in mania was seen when treated with atypical antipsychotics; but use of benzodiazepines were also useful as adjunct of treatment for hyperactivity and insomnia. However, with benzodiazepines, drug efficacy and sensitivity can change secondary to presence of underlying stroke. Mood stabilizers have also been used previously with success, although Lithium tends to be controversial when used for cerebral lesions.[3]
- As for post-stroke patients with a depression, recent studies have demonstrated that the symptoms can last up to a year without treatment but can improve specifically with tricyclic antidepressants. Depressive symptoms are strongly associated with a "left frontal or left basal ganglia lesions and pre-existing subcortical atrophy."[3] They also do not tend to be associated with severity of impairment, personal history, social support or demographic characteristics. Providers should be careful when prescribing antidepressants in patients with recent cerebrovascular incidents or chronic brain injuries as it leads to increased risk of antidepressant-induced mania.[2]

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Community Health Network

Will optimizing order preferences improve clinic order efficiency by decreasing time in orders per appointment?

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Community South Osteopathic Family Medicine Residency; Greenwood, IN

INTRODUCTION

- Multidisciplinary clinical documentation project improvement longitudinal team
- Informal medical assistant survey identified frequent incorrect vaccine and lab orders.
- Goal to improve clinic documentation efficiency by decreasing time in orders per appointment by 20%.
- Secondary end point to increase percentage of orders with unchanged defaults by 20%

METHODS

Utilized Epic Signal to collect data for 3 months.

↓

Created clinic preference list to match medication and vaccine stock as well as lab order defaults.

↓

Shared preference list and educated clinic attending and resident physicians on use.

↓

Utilized Epic Signal to collect data for 3 months.

DATA

RESULTS

- Utilized paired T-tests
- Time in orders per appointment
  - Average improved by 0.7% (3.40 to 3.38 minutes)
  - P-value 0.74, not statistically significant
- Orders with unchanged defaults
  - Average improved by 10.5% (54.6% to 61.0%)
  - P-value 0.0029, very statistically significant

DISCUSSION

- Time in orders per appointment did not meet goals and did not have statistically significant change.
- Despite secondary end point having statistically significant improvement, this is likely not impactful on overall efficiency based on data.

LIMITATIONS

- Resident physicians gain experience as a confounding factor.
- Medical assistant staffing limited clinic collection of labs affecting default orders.
- Epic improved care gaps option when ordering vaccines.

RESOURCES

- Epic Signal
- Get Faster! - Epic Efficiency handout created by Dr. Dan Fisher, MD
- Moore LG, Wasson JH. The ideal medical practice model: improving efficiency, quality and the doctor-patient relationship. Fam Pract Manag. 2007 Sep;14(8):20-4. PMID: 17912818.

Serotonin Syndrome with Quetiapine, Rizatriptan, Gabapentin and Propranolol

By
Madeline Schmiedeknecht MS3, Victoria Nobari D.O,
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Community Health Network

Introduction

Serotonin syndrome (SS) is a potentially fatal medical emergency caused by increased serotonergic activity in the central and peripheral nervous system. Diagnosis is based on clinical presentation which is characteristically a triad of: mental status, autonomic dysfunction, and neuromuscular hyperactivity. While more severe symptoms and most common offending agents known, research still supports that SS is still mistaken/ misdiagnosed and the true incidence of is unknown. In such cases, subsequent administration of serotonergic drugs can result in rapid deterioration and death. This case describes a middle aged male with quetiapine induced serotonin syndrome.

Triad of symptom presentation stratified by severity

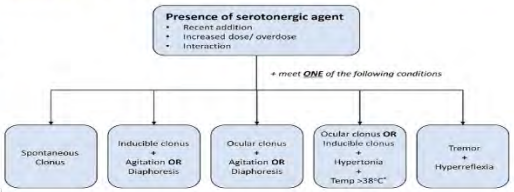
	AUTONOMIC	NUEROMUSCULAR	MENTAL STATUS	Differential Diagnosis (DDx)
Mild	Afebrile, Tachycardia, low-grade fever, Diaphoresis, Mydriasis, or shivering	Intermittent tremor, Akathisia, Myoclonus, Mild hyperreflexia	Restlessness, Anxiety	**Sedative-hypnotic** withdrawal, Flu, sympathetic intoxication
Mod-erate	↑Tachycardia, Fever (up to 41°C), Diarrhea with hyperactive bowel sounds, Diaphoresis with normal skin color	Hyperreflexia, Inducible clonus, Ocular clonus (slow continuous lateral eye movements), Myoclonus	Easily startled, Increased confusion, Agitation Hypervigilance	Rhabdomyolysis, Encephalopathy Metabolic acidosis Renal failure DIC (2nd to hyperthermia)
Severe	Temperature often more than 41°C (Secondary to increased tone)	Increased muscle tone, (lower limb > upper), Spontaneous clonus, Substantial myoclonus or hyperreflexia, Rigidity	Delirium, Coma	As above + NMS

Case description

A 58-year-old male who presented to the emergency department (ED) due to muscle stiffness, uncontrollable limb movements and feeling as though he were on fire. He also reported discontinuing buprenorphine 3 days prior. Initial suspicion was opioid withdrawal. Vitals were BP: 160/70, HR: 104 O2 Sat: 91%. Medications prior to admission included quetiapine, rizatriptan, propranolol, and gabapentin. Abnormal lab urine drug screen (UDS) positive for buprenorphine, cannabinoids, and tricyclic antidepressant (TCA). Creatinine phosphokinase (CPK) was 1225.

Case Cont.

Initial ddx included opioid withdrawal, acute encephalopathy, and rhabdomyolysis. Following psychiatry consult, suspicion was early SS and serotonergic agents were held. On further review and assessment Hunter Criteria was met for a diagnosis of SS.



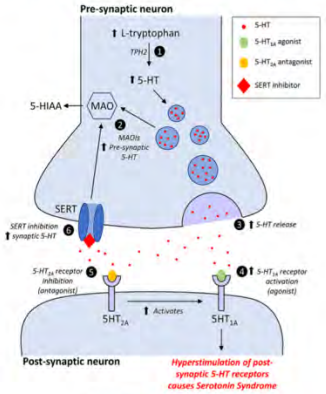
Clonus started to improve and CPK trended down, monitored overnight and discharged home the following day with symptom resolution. He was recommended he stop taking methylprednisolone and rizatriptan, and slowly taper off quetiapine and gabapentin with no other prescription changes.
He presented the following month to the ED with increased psychomotor agitation. He was assessed and discharged home with primary diagnosis unspecified anxiety disorder.
The next day patient returned to the ED and with worsening psychomotor agitation, agitation, hypervigilance spontaneous clonus, hyperreflexia tactile hallucinations , and involuntary clonus of all extremities. Vitals signs showed low grade fever at 100 °F respiratory rate 22/min -oxygen saturation 92%.
Medication review indicated patient was recently restarted on rizatriptan, and still taking quetiapine and propranolol. UDS was positive for buprenorphine, benzodiazepines. Using hunter criteria SS was the primary diagnosis. Propranolol, rizatriptan, and quetiapine were identified as possible offenders and stopped and subsequent reduction autonomic and neuromuscular symptoms over the course of 48hrs. Remaining symptoms were now better explained by opioid withdrawal as sufficient time had passed for washout of offending agents and patients last reported use of opioids. Following treatment for opioid withdrawal, patient was discharged home without quetiapine.

Management

- 1st Stop potential serotonergic offending agents monitored for clinical improvement
- Hunter Serotonin Toxicity Criteria along with Toxicology consult are GOLD STANDARD
- At least 15, 5-HT receptors known receptors thought the body
- Mild – Can generally be managed by discontinuing offending agent, and supportive care, lack of improvement warrants transfer for medical management

Management Cont.

- Moderate to Severe – control of agitation and repetitive muscle movements with benzodiazepines prevent morbidity and mortality
- Diagnostic controversy – latest research suggest Hunter to be superior.
- Sternbach – First classification ever, published 1999, 10 non-specific criteria poor differentiation
- Radomski – Refined Sternbach's, 2001, added rigidity neuromuscular symptoms, focused on severity rather than diagnosing
- Hunters – gave a decision tree for diagnosing SS with clinical significantly features associated with patients diagnosed by a clinical toxicologist, best in moderate to severe cases



Discussion

- Was nearly misdiagnosed and or missed, increasing risk of fatality.
- DDx involved patients two admissions
  - Opioid withdrawal, anxiety, acute encephalitis,
  - Only after r/o of differentials was re-examination SS lead ddx
- 4 different classes of medications all with serotonergic effects
  - Quetiapine seen a low risk of serotonin syndrome alone, it can occur if a patient is taking multiple serotonergic medications.
- Increased reports of serotonin syndrome with concomitant use of buprenorphine and selective serotonin reuptake inhibitors (SSRIs) or TCAs.

P10

Community Health Network

Comparison of Precipitated Withdrawal with Buprenorphine with Different Methods of Medication Induction: Micro-induction with Full Agonist versus Macro-induction

James Barton, DO; Dustin Cundiff, DO; Emily Zarse, MD

Background:

Buprenorphine is recognized as best practice for first line treatment of opioid use disorder since its properties as a partial opioid agonist contribute to a better safety profile to alternatives such as Methadone (which is a full opioid agonist) (1). However, that same partial agonist property can contribute to precipitated withdrawal when patients are already on a full opioid agonist (2) and that includes fentanyl which is prevalent among the illicit drug market.

Traditionally, patients would abstain from opioids for a period of 4 – 5 half lives to allow for clearance prior to initiation with Buprenorphine but fentanyl's lipophilic properties make it more difficult to predict and can cause a delayed or unpredictable onset of withdrawal symptoms (10). If Buprenorphine is initiated before fentanyl is cleared, the patient is at higher risk for precipitated withdrawal (1) and complicated induction on Buprenorphine has been associated with worsened treatment outcomes and decreased 30-day retention to treatment (3).

The 3 induction methods of Buprenorphine are traditional approach, micro-induction, and macro-induction. Traditional induction consists of monitoring patient withdrawal symptoms and administering Buprenorphine based off withdrawal scoring (11). Micro-induction allows incremental increases in dose and frequency of Buprenorphine while continuing a full opioid agonist until therapeutic dose of Buprenorphine is achieved. Patients reported this induction process being well-tolerated compared to traditional induction approach (7, 8). Macro-induction is the use of a single large Buprenorphine dose that can also avoid precipitated withdrawal by providing a sufficient dose to occupy the available mu opioid receptors and may be beneficial in patients and can be done without a full opioid agonist (12). There is no definitive evidence that macro-induction is superior to micro-induction but this study would look to compare the 2 approaches for comparison of outcomes.

Objectives:

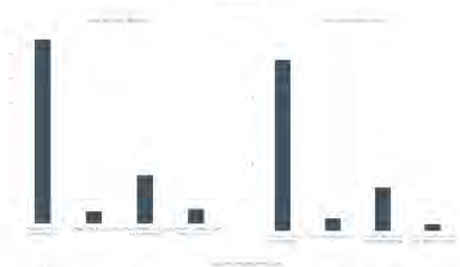
Investigate the following questions:

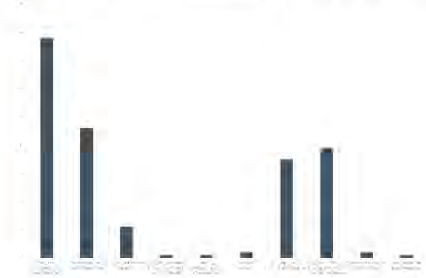
- Are patients who undergo induction of Buprenorphine with a macro-induction approach more or less likely to score higher on withdrawal scoring (COWS scores) in the initial 48 hours of medication administration compared to micro-induction patients?
- Are patients who undergo macro-induction more or less likely to require another admission or emergency department visit in the 3 months that followed their discharge date when compared to patients treated with micro-induction approach?

Method:

- Retrospective Chart Review
- Identified patients receiving treatment for inpatient opioid detoxification with Buprenorphine at Community North Behavioral Health Pavillion Unit 5 and Fairbanks Recovery Center from 5/1/2023 to 8/31/2023.
- These two locations were chosen because Community North Behavioral Health Pavillion is more likely to utilize micro-induction and Fairbanks Recovery Center is more likely to utilize macro-induction.
- Inclusion Criteria: Adults undergoing micro-induction or macro-induction with Buprenorphine at the two locations listed above.
- Exclusion Criteria: Patients not undergoing buprenorphine induction, minors, pregnant individuals, patients also undergoing detoxification from alcohol or sedative withdrawal.

Results:





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Analysis:

-Statistical analysis performed using Chi-Square Goodness of Fit testing; p-value obtained at <0.05.

Conclusion:

- When looking at individuals treated with micro-induction vs individuals treated with macro-induction, there was a statistically significant difference ($p = 0.01$) between the withdrawal scores with the micro-induction group when compared to the macro-induction group.
- When looking at rates of related admissions and emergency department visits 3 months from their discharge date, the groups had similar outcomes (26.3% for micro-induction and 25.5% for macro-induction) and the difference between them was not found to be statistically significant.

Discussion:

- While the COWS scores for the individuals treated with macro-induction tended to be higher when compared to those who received micro-induction, a large limiting factor in this study was that there tended to be less documented COWS scores at Fairbanks Recovery Center when compared to Community North Behavioral Health Pavillon. As a result, the data points for the macro-induction approach may have been more skewed by the limited data points that were available.
- It was notable that many of the subjects that were initially identified for the study had to be excluded because of concurrent detoxification from alcohol and/or sedatives. This demonstrates the large amount of people that have concurrent use of alcohol or sedatives along with opioids, but they were excluded from this study because of the overlap between the withdrawal pictures between opioids and alcohol/sedatives.
- The amount of repeat related hospitalizations between the individuals treated with micro-induction and the individuals treated with macro-induction were similar. However, it is possible that some treatments may have been missed if a patient was treated at a facility out of network and was not seen on Care Everywhere.
- There may have also been patients without hospitalizations or emergency department visits within 3 months that were lost to follow up. A possible criteria to look for in a future study would be outpatient follow up and 3-month retention.
- An important item to highlight is the discharge protocols between the two facilities. At Fairbanks Recovery Center patients are able to sign an AMA discharge at any point during their hospitalization. However, at the Community North Behavioral Health Pavilion patients must sign a 24-hour notice before discharging. This could impact the data where patients at Fairbanks would in theory leave with higher average COWS if they were experiencing precipitated withdrawal, whereas patients at the Pavilion could have lower average COWS scores if they had more time to symptomatically improve.
- The average COWS for micro induction was found to be 2.56 and the average COWS for macro induction was 3.75. Of note, a "mild" COWS ranges from 5-12. Although, there was a statistical significant difference between the two induction methods they both fell below what would be classified as mild withdrawal symptoms.

A Case Report of Missed Compartment Syndrome After a Crush Injury in the Foot and Ankle

Dusty Waltz, DPM, PGY-2[1], Michael Baker, DPM[2]

1. Community Health Network, Podiatry Surgical Resident 2. Community Health Network, Podiatry Surgical Residency Program Director

INTRODUCTION

This is a case presentation of a missed acute compartment syndrome (ACS) in an otherwise healthy 19-year-old male after he suffered a crush injury from a hydraulic press to bilateral feet. Compartment syndrome is a condition in which the anatomic compartment pressures can increase to a level that can cause extensive damage to musculature, vasculature, and nerves in a short amount of time[1,2]. Early detection of ACS, especially in the foot and ankle, is key for avoiding limb and life loss[1,2].

CASE PRESENTATION

The patient originally presented to an outside facility within a few of hours after his initial injury due to pain and swelling to bilateral feet. Radiographs performed showed no acute fractures or dislocations. He had a laceration to the right medial foot which was cleansed and sutured closed with chromic gut. He was given pain medication, one dose of intravenous antibiotics, and a follow up with orthopedics 1 week later; no further work up was performed. The patient presented to our hospital 2 days later with worsening discoloration to toes 1-3 of the right foot only. The right foot had dusky tissue from the metatarsal shafts and distally of rays 1-3. He had no feeling to the distal tips of toes 1-3. Repeat radiographs showed no changes. A CT angiogram was ordered to assess vascular status which showed no arterial injury, patent DP and PT, and moderate soft tissue edema. The patient was admitted to our hospital for further workup.

MANAGEMENT AND OUTCOMES

A Wick's catheter was utilized to measure the 1st and 2nd dorsal interspace compartments to the right foot which measured 23 and 24. Given the pressures and timeframe from initial injury, the patient was not a surgical candidate for decompression fasciotomies[3]. Two bedside stab incisions were made into the 1st and 2nd interspaces to release the compartments, and two Penrose drains were placed and left for 3 days until there was no drainage.

CLINICAL PICTURES

A. Initial presentation to our emergency department.

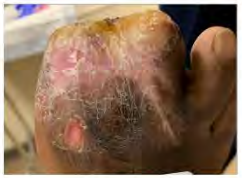
B. One day s/p bedside drain placement.

D. Intra-operatively. Sharp excisional debridement performed until healthy granular wound base remained. Patient then underwent partial amputation to toes 1,2, and 3 right foot.

E. A cross-linked bovine tendon collagen and semi-permeable graft was placed overlying the surgical amputation sites to promote quicker healing.

C. Visit immediately prior to surgical intervention 2 months after initial presentation. Tissues demarcated enough to perform surgery.

F. Two months s/p surgical debridement and partial toe amputations.



G. Eight months s/p initial presentation. Five months s/p surgical intervention. Almost completely epithelialized.

MANAGEMENT AND OUTCOMES, cont.

The patient was seen at the wound care center shortly after discharge and was approved for hyperbaric oxygen (HBO) therapy. He underwent HBO therapy 5 times weekly and was having weekly wound debridements. After adequate demarcation was achieved, the patient underwent partial amputation to toes 1-3 on the right foot and had a skin substitute graft placed intra-operatively overlying the remaining surgical wound. The patient continued with local wound care, debridements, HBO therapy, and multiple in-office skin substitutes. At 9 months from his original injury, he is close to completely healed with no functional deficits.

DISCUSSION

Clinical suspicion should be high for ACS in any traumatic or crush injury to the foot and ankle[4]. Early detection of ACS is key to decreasing the amount of tissue, muscle, and nerve necrosis and providing the patient with the best possible outcome[2]. However, if missed, it is important to provide aggressive local wound care with the addition of advanced modalities (skin grafting, HBO therapy, etc.) to ensure full recovery with minimal limb[3,5].

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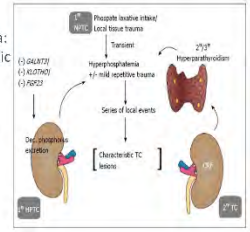
Case Presentation: Tumoral Calcinosis

By Brendan Ray, DPM and Christopher Smith, DPM

Community Health Network

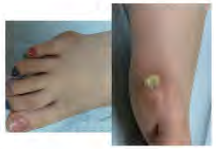
Introduction: This is a case presentation of tumoral calcinosis in a 5 year old African American girl. Tumoral Calcinosis is a rare calcium mass deposition commonly seen overlying large joints in the body including shoulder, hips, and elbows (1,2). Tumoral Calcinosis can affect all age groups, however it is usually found in adolescents. While more rare in Europe and North America 2/3 of reported cases come from Africa and is more commonly present in African populations (3). It often manifests as painless and firm soft tissue mass that forms near a joint, and may interfere with joint function when large (2). Depending on the size of the mass it can appear on X-ray which can be used to narrow down the differential. However, MRI and CT yield greater diagnostic imaging.

Introduction continued: TC is classified into primary hyperphosphatemic, primary normophosphatemic, and secondary varieties (3). Primary normophosphatemic occurs in individuals with no calcium and phosphate abnormalities. Tumoral calcinosis has a correlation with trauma: micro trauma, repetitive trauma, chronic trauma; especially in normophosphatemic patients (1,2). Secondary varieties include hyperparathyroidism, end-stage renal disease, vitamin D toxicity, milk-alkali syndrome, and osteolysis (2).



Case: A 5 year old African American girl presents with mother and father to clinic after referral from pediatric doctor for a left heel lesion. The patient denies stepping on anything. Mother states it has been present for about 5 years now and has only recently started to bother her when ambulating. Parents relate to dozens of needle sticks in heel of patient when she was a newborn. The lesion is located on the patients left heel several cm distal to the calcaneal tuberosity. It is a hyperkeratotic papulosquamous lesion that is approximately 3mm in diameter. It has a positive Auspitz sign, is tender to direct palpation and side to side squeeze test. No drainage, no erythema, no edema. Differentials were discussed with family including verruca vulgaris, dermatofibroma, or other benign soft tissue lesion. Surgical vs conservative treatments were then discussed and the patient and family wished to proceed with excision and biopsy of the lesion.

Management and Outcome: Patient was brought into Operating Room, sedated, and the area was prepped sterilely. An elliptical full-thickness incision was made encompassing the 3mm lesion of the left heel. The area was the flushed with copious amounts of sterile saline and then closed with 3-0 nylon. The lesion was sent to pathology which came back as tumoral calcinosis. The patient was then seen every week in the office post operatively with the sutures being removed 2.5 weeks post op. The patient followed up 3 weeks after suture removal and has returned to full activity without pain. The patient has not had any reoccurrence of the lesion and is currently prn.



Discussion: Tumoral calcinosis is overall a benign tumor with low reoccurrence following excision and medical management of the underlying cause (1). Secondary types can pose a greater challenge in management if underlying cause cannot be controlled, and have a higher recurrence rate (1). Although a benign lesion it should still be kept in the differential for the primary and secondary phosphatemic types due to the higher recurrence rate and to manage the underlying cause.

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Reducing ED Visit Frequency Through Implementation of Same-Day PCP Visits

Cally Wilson, MD, PGY3
Community East Family Medicine Residency

Community Health Network

Introduction

- The emergency department is often overused for conditions that could be seen in a primary care office
- The FMC (family medicine center) of the Community East Family Medicine Residency offers plenty of same-day appointments, and patients are often not aware they can utilize this service.
- The goal of this study was to make patients aware of same-day appointment availability and subsequently increase same day office visits while decreasing ED visits for our panel.

Baughman et al., 2021

- ED visits cost 4x as much as PCP visits
- Decreasing ED usage by 1.5% saved their hospital system $825,902

Yoon et al., 2015

- Study at California VA clinics
- Increased same day access reduced non emergent use of local ED by their patient panel

Schrader et al., 2019

- Study in a Texas community where they assigned a PCP and gave charity insurance to patients who visited the ED
- Reduced ED discharge failures and overuse

Methods

Criteria for targeted intervention

Adult patients whose PCP is one of the residents at FMC (24 total physicians).

Had an ED visit in the last 90 days, excluding visits for common emergent diagnoses.

Implementation

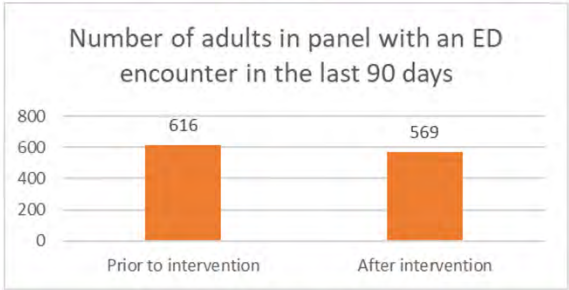
Sent MyChart messages to patients meeting criteria who had an account.

Hung up informational fliers in exam rooms.

Data analysis

Slicer Dicer in Epic was used for counts of total patients who have used ED in last 90 days before and after intervention. Qualitative analysis conducted.

Results



Discussion

- Approximately 7% overall decreased number of patients with an ED visit over the preliminary study period (from 3/12/24 to 4/27/24).
- Hoping to continue to see a decrease in ED usage over time with the patient panel as awareness increases.
- Confounding factors may include end of cold and flu season, and inability to look at individual patient charts to follow a trend.

Acknowledgements

Special thanks to Dr. CJ Skok, Dr. Andrew Brougher, Dr. Daniel Fisher, and Dr. Lindy Sergeant for their advice and support in conducting this process improvement project.

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Patent Data Analysis for Predicting Innovation Output and Quality in the Pharmaceutical Industry

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Introduction

- The innovation process is risky, especially in the pharmaceutical industry where great investment is placed in research with no guarantee that drugs will successfully pass through clinical trials.
- To aid in risk mitigation, we perform patent data analysis to better understand factors that influence innovation in the pharmaceutical industry.
- Pharmaceutical firm-level data is collected from sources including Bloomberg, MarketLine, Nexis Uni, and patent offices such as the United States Patent and Trademark Office, the European Patent Office, etc.
- Data is analyzed with text-mining and machine learning algorithms.

Measurements Calculated From Data

- Innovation Output: The number of patents granted to a firm
- Innovation Quality: The number of citations received by a patent
- Knowledge Base: A firm's knowledge as represented by its granted patents as well as the patents that it cites in a particular year
- Knowledge Development Ratio: Changes in a firm's knowledge base from one year to the next. In particular, the proportion of patents in the knowledge base for a particular year that are also in the prior year's knowledge base.

Results and Discussion

- Using the Naïve Bayes text-mining algorithm, we find that the content of patent abstracts can be used to predict whether or not a patent will garner above-average citations. In particular, we find that patents which are more broad in focus tend to receive the most citations.
- Using machine learning methods such as regression, k-nearest neighbors, and regression trees, we find statistically significant nonlinear relationships between innovation output, the knowledge development ratio, and the proportion of revenue spent on research and development (R&D).
- A concave parabolic relationship between the knowledge development ratio and innovation output is found, with p-values for the regression being smaller than 0.05. Firms with the largest innovation output tended to have yearly knowledge development ratios between 0.35 and 0.6.
- A concave parabolic relationship is also found between innovation output and the proportion of revenue spent on R&D, with the firms with the largest innovation output spending roughly between 18% and 22% of revenue on R&D.
- Our results and continued study can inform pharmaceutical firms regarding factors that could yield higher innovation output and quality.

A prospective, repeated measures study: How long does it take for patients to recover their preoperative gait function, following a Unilateral TKA with conventional physical therapy?

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Introduction

Knee osteoarthritis (OA) often results in chronic pain, deformity, decreased mobility, function, and quality of life.[1,2] It can cause gait deviations that include slower walking velocity, lurching associated with pain and stiffness, insufficient ROM and other asymmetrical compensations.[5] A common surgical intervention is the total knee arthroplasty (TKA), which has been found to be an effective treatment for advanced knee OA.

Despite varying levels of improvement in pain, patients have shown to have functional gait limitations following TKA.[7] The purpose of this study was to determine how subjective and objective measures are associated with gait function before and after a unilateral TKA. Our hypothesis was that spatiotemporal parameters of gait will improve due to the treatment of conventional physical therapy. Additionally this study sought to identify if objective measures collected at 2 and 4 months following surgery correlated with this return to normal speed and function.

Participants

Participants were recruited through the Shelbourne Knee Center at Community East Hospital using convenient sampling.

Inclusion Criteria:
Diagnosis of OA related to the surgical knee being managed by the study principal investigator (an experienced orthopedic surgeon)
At least 18 years of age and were scheduled to have a unilateral TKA.

Exclusion Criteria:
History of previous primary or revision TKA for either knee
Were planning on receiving contralateral TKA within the next year.
Having a TKA for other reasons not related to osteoarthritis
History of a major orthopedic surgery on the contralateral limb within the last 10 years

Table 1 includes the demographic information for the participants

	Mean	Range
Age (years)	61	24-77
Height (in)	68	58-75
Weight (kg)	104.95	80.73 - 135.62
BMI	35.42	24.40 - 42.34

Table 1 - Participant demographics

Methods

Participants had subjective and objective measures collected prior to surgery as well as at 2- and 4-months post-op.

At the Shelbourne Knee Center, the following data was collected:
The Timed up and Go (TUG)
The Knee Injury and Osteoarthritis Outcome Score (KOOS)
Knee ROM (flexion and extension)
Isokinetic quadriceps strength
Single leg isometric leg press strength

The following variables were collected at the University of Indianapolis with the Zeno Walkway:
Gait velocity/speed (m/s)
Step length (m)
Stride length (m)
Cadence (steps/min)

A Pearson correlation efficiency test at the timed intervals of 2 month and 4 month post op were administered to differentiate which of the above variables better correlated with return to normal function as measured by greater gait measurements of cadence and velocity.

Results

A total of 8 participants completed the full data collection during the time period, with data collection continuing. Preliminary results are presented.

Table 2 displays the mean gait parameters for the participants prior to surgery, and a 2 and 4 months post-surgery. By 2 months following TKA, mean gait parameters had all returned to pre-op levels.

Gait parameter	Pre-op	2 month	4 month
Step Length (avg)	59.15	59.92	61.48
Step Length (affected	59.17	60.22	61.79
Step Length unaffected)	59.14	59.60	61.22
Stride length (avg)	117.95	120.15	123.38
Stride Length (affected)	117.93	120.03	123.28
Stride Length (unaffected)	117.97	120.27	123.48
Single Limb support (sec)	0.353	0.353	0.341
Double limb support (sec)	0.382	0.359	0.326
Cadence	112.42	113.05	119.66
Velocity	1.11	1.13	1.23

Table 2 - Mean Gait Parameter Measurements

Results (Continued)

While mean gait variables had returned to normal, individuals achieving their pre-surgery gait parameters are displayed in Table 3.

Measure	% of Pre at 2 months	Number at 2 months achieving pre-op pace	% of pre at 4 months	Number at 4 months achieving pre-op pace
Cadence	101.2%	5	107.2%	6
Velocity	105.0%	4	114.0%	5

Table 3 - Comparison of Gait parameters to pre-op

-The correlation of clinical variable to gait parameters at pre-surgery, 2- and 4-months post-surgery are displayed in Table 4-6.
-Functional Outcomes including the KOOS were not associated with gait parameters at any timeframe.
-Strength measures were associated with gait parameters at the pre-surgery and 2-month time points.
-ROM measures were only associated with shorter strides/cadence at 2-months, but not with any other gait parameters at any time frame.

Measure	Cadence	p-value	Gait Velocity	p-value
KOOS	0.161	0.70	0.131	0.76
KOOS-Pain subscale	0.262	0.53	0.273	0.51
KOOS -walking item	-0.079	0.85	-0.102	0.81
Extension ROM	0.194	0.68	0.486	0.27
Flexion ROM	0.391	0.39	0.571	0.18
Cybex Quad 120	-0.402	0.43	0.741	0.09
Cybex Quad 180	-0.320	0.54	0.756	0.08
Leg Press	-0.310	0.55	0.867	0.03*
Leg Press LSI	0.079	0.88	0.890	0.02*
TUG time	-0.196	0.71	-0.487	0.33

Table 4 – Pearson Correlations pre-op

Measure	Cadence	p-value	Gait Velocity	p-value
KOOS	-0.069	0.87	-0.274	0.51
KOOS-Pain	-0.146	0.73	-0.076	0.86
KOOS -walking	0.114	0.78	0.170	0.69
Extension ROM	-0.821	0.02*	-0.101	0.83
Flexion ROM	-0.315	0.49	-0.454	0.31
Cybex Quad 120	0.286	0.54	0.654	0.10
Cybex Quad 180	0.330	0.47	0.755	0.05*
Leg Press	-0.427	0.34	0.620	0.14
Leg Press LSI	0.203	0.66	0.447	0.31
TUG time	-0.546	0.21	-0.760	0.05*

Table 5- Pearson Correlations at 2 months post-op follow up

Measure	Cadence	p-value	Gait Velocity	p-value
KOOS	-0.498	0.21	-0.478	0.23
KOOS - Pain	-0.513	0.19	-0.567	0.14
KOOS - walking	0.417	0.30	0.377	0.36
Extension ROM	-0.450	0.31	0.223	0.63
Flexion ROM	0.195	0.67	0.707	0.08
Cybex Quad 120	-0.655	0.16	0.235	0.65
Cybex Quad 180	-0.595	0.21	0.239	0.65
Leg Press	-0.411	0.36	0.162	0.73
Leg Press LSI	-0.390	0.39	0.024	0.96
TUG time	0.204	0.70	0.050	0.93

Table 6 – Pearson Correlations at 4 months Post-op follow up

Conclusion

Patients and therapists can expect that gait parameters will be at or near baseline levels of gait cadence and velocity by 2 months.

Our findings also indicate that most will exceed their functional gait measures by 4 months with rehabilitation.

Strength may be important to gait function with strength measures at preoperative time as well as 2 months following a TKA significantly associated with gait velocity.

This may indicate that an approach that focuses on regaining strength is important to regaining gait function. The preliminary findings are limited at this time and data collection is ongoing.

Acknowledgements

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Examination of Changes in Clinical Outcomes for Patients Living with Human Immunodeficiency Virus (HIV) before and after Conversion to Injectable Cabotegravir/rilpivirine

Community Health Network

Ethan Robinson, Pharm.D.; Megan Kelly, Pharm.D., MPH; Kelly A. Cochran, Pharm.D., BCPS

May 14, 2024

Introduction

- Cabotegravir/rilpivirine (CAB/RPV) is the first and only complete antiretroviral (ART) regimen FDA-approved for the treatment of HIV-1 that is available as a long-acting injectable (LAI) and can be administered monthly or every two months[1]
- The SOLAR Phase 3b trial found that 90% of patients preferred injectable CAB/RPV to oral bictegravir/emtricitabine/tenofovir alafenamide due to convenience, easier adherence, and fewer reminders of HIV stigma[2]
- To date just two small studies have evaluated the efficacy of injectable CAB/RPV outside of clinical trials, and neither evaluated safety or adherence[3-4]

Methods

Primary Outcome
- Relative and absolute change of HIV RNA viral load and CD4+ lymphocyte count before and after conversion to injectable CAB/RPV

Secondary Outcomes
- Absolute change in body weight/body mass index, serum lipids, renal function and hepatic function before and after conversion to injectable CAB/RPV
- Change in relative adherence when swtiching from oral ART to injectable CAB/RPV

Study Design
- Pre-post study
- Data from January 1, 2021, to September 30, 2023, collected via retrospective chart review
- Descriptive statistics (percentages, mean and standard deviation, median and interquartile range) used for data analysis

Inclusion Criteria
- Adults ≥18 yo with a diagnosis of HIV-1
- Patients initiating injectable CAB/RPV and following at a Community Health Network infectious diseases clinic
- Patients taking injectable CAB/RPV for at least 3 months and oral ART for at least 6 months prior to switching

Exclusion Criteria
- Pregnancy
- Incarcerated/institutionalized individuals
- Missing data precluding analysis of at least one primary or secondary outcome
- Known HIV-resistance to either CAB or RPV

42 patients were included in the outcome analysis with a range of 16-40 patients analyzed for each outcome

Results

1º Endpoint	Percent Undetectable (%) n = 35	CD4+ Count (cells/mm³) Median (IQR) n = 16	1º Endpoint	Δ Viral Load (copies/mL) n = 35	Δ CD4+ Count (cells/mm³) n = 16
Pre-conversion	74.3	814.5 (604.5, 1048.5)	Mean & SD	15.5 +/- 107.1	11.4 +/- 207.3
Post-conversion	88.6	805.5 (670, 984.5)	Median & IQR	No Change	-29.5 (-150.2, 159)

Baseline Data n = 40	Mean & SD	Median & IQR	2º Endpoint n = 40	Mean & SD	Median & IQR
Weight (kg)	97.3 +/- 29.9	91.2 (76.9, 112.3)	Δ Weight (kg)	2.55 +/- 7.92	0.70 (-0.5, 6.35)

Baseline Demographics	
Age (years), mean (SD)	44.5 (11.8)
Sex assigned at birth, n (%)	
Male	39 (92.9)
Female	3 (7.1)
Gender identity, n (%)	
Cisgender	39 (92.8)
Transgender	2 (4.8)
Other	1 (2.4)
Race, n (%)	
White	25 (59.5)
Black	16 (38.1)
Mixed/Other	1 (2.4)

2º Endpoint n = 18	Δ Total Cholesterol (mg/dL)	Δ HDL (mg/dL)	Δ LDL (mg/dL)	Δ Triglycerides (mg/dL)
Median & IQR	-7.5 (-26, 7.3)	1.5 (-9.3, 7.5)	-4.5 (-22.5, 5.25)	-24.5 (-71.5, 30.8)

2º Endpoint	Δ SCr (mg/dL) n = 39	Δ ALT (U/L) n = 37	Δ AST (U/L) n = 37	Δ ALP (U/L) n = 37	Δ TBili (mg/dL) n = 37
Median & IQR	-0.01 (-0.11, 0.08)	No Change	No Change	No Change	0.10 (0, 0.3)

2º Endpoint	Percent of Days Covered for Oral ART (%) n = 26	Percent of On-time CAB/RPV Injections (%) n = 40	Δ Relative Adherence (%) n = 26
Mean & SD	93.1 +/- 10.1	94.2 +/- 9.6	2.25 +/- 12.9
Median & IQR	99.5 (88.2, 100)	100.0 (88.9, 100)	No Change

Discussion

Strengths
- Long study period
- Varying oral ART regimens pre-conversion
- Variances in wild-type HIV

Limitations
- Small sample size
- Few cisgender female or transgender patients
- Missing data and inconsistent time to variable measurement
- Could not account for all confounding variables

Conclusions
- Most patients will maintain viral suppression after switching to injectable ART with non-clinically significant decreases in CD4+ count
- Patients may experience weight gain after switching to injectable ART
- Injectable CAB/RPV is unlikely to affect renal or hepatic function
- There was a slight improvement in mean adherence with injectable ART
- More research is needed to determine the effect of injectable ART on lipids

Disclosure

No research members have actual or potential conflict of interest in relation to this presentation

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Community Health Network

An Evaluation of the Impact of Pharmacist Management of Osteoporosis in the Ambulatory Care Setting

Juliet Fatunbi, PharmD; Anne Packard, PharmD, BCACP; Karie Morrical-Kline, PharmD, BCACP

Background

In the U.S., approximately 8 million women and 2 million men over 50 years old have osteoporosis. About 27 million women and 16 million men have low bone mass and are at increased risk of developing osteoporosis.[4] Proper screening, diagnosis, and therapy management are necessary to ensure that patients are treated early, appropriately, and effectively.

Studies have shown that the impact of pharmacist-physician collaboration on osteoporosis treatment management results in increased:[2]

- Assistance with choosing anti-fracture therapy initiation
- Calcium and vitamin D supplementation compared to physician-only management
- Alignment of screening and therapy recommendations to osteoporosis guidelines

Study Objectives

Primary: Determine the volume and type of interventions that are made by pharmacists when completing osteoporosis management visits

Secondary: Assess the impact of pharmacist involvement in overall osteoporosis management

Methods

CHNw Ambulatory Care Clinic → Patients referred to pharmacists for osteoporosis management → Retrospective chart review → January 1, 2023 to June 30, 2023 → Patient MRN list acquired via EMR Dashboard

Inclusion Criteria

- ≥ 18 years old
- Osteopenia or osteoporosis diagnosis
- Being seen by an ambulatory care pharmacist for osteopenia or osteoporosis

Exclusion Criteria

- Patients being followed by specialties other than primary care
- Patients who were not on treatment prior to seeing a pharmacist (new start)
- Patients < 18 years old
- Pregnancy
- Incarceration
- Patient's that declined pharmacist collaborative care

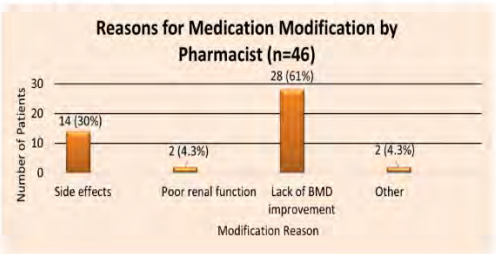
Results

Two hundred patients met inclusion criteria. The average patient was 76 years old, white (95%), postmenopausal (91.5%), and female (93.5%) with a diagnosis of osteoporosis (92.5%).

Pharmacists identified 27.5% and 48% of patients were taking lower than guideline recommended daily vitamin D and calcium supplementation, respectively. As a result, education on supplementation was provided for 91.5% of patients and doses were optimized for vitamin D and calcium.

Recommended Calcium Modification (Food & Supplements) Total % (n)	
Dose increase	28% (56)
Dose decrease	1% (2)
Initiate supplement	24.5% (49)
Increase dietary intake	37% (74)
No changes	45.5% (91)
Recommended Vitamin D Modification Total % (n)	
Dose increase	12.5% (25)
Dose decrease	2.5% (5)
Increase frequency	0.5% (1)
Initiate supplement	16% (32)
No changes	68.5% (137)

- Risk factors for osteoporosis, including medications, were identified in 60% of patients
- Documented educations were completed for 94% of patients
- Adverse effects and barriers to adherence with anti-fracture therapy patients were on prior to seeing a pharmacist were identified in 12% and 11.5% of patients, respectively
- Ordered tests for outdated DEXA scans, vitamin D/calcium levels and renal function tests
- Approximately 23% of patients had anti-fracture therapy regimen modified by the pharmacist, most often due to a lack of bone mineral density improvement noted on a recent DEXA scan



Conclusion

Pharmacist Interventions and Their Impact:

- Recommendations to minimize use of medications contributing to osteoporosis
- Encouraging adherence to guideline recommended vitamin D and calcium supplementation
- Encouraging adherence to 1–3-year DEXA scans and routine calcium, vitamin D, and renal function tests
- Optimizing medication regimen based on tolerability, renal function, or lack of bone mineral density improvement with prior therapy
- Increased education regarding medications, lifestyle modifications, lab follow up, and supplementation

This CHNw study data can contribute to growing evidence of clinical interventions taking place to help reduce osteoporosis treatment gaps within the United States.

Disclosure

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

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May 14, 2024

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Community Health Network

Impact of Hydrocortisone Regimen on Shock Reversal in Hospitalized Patients with Septic Shock: A Retrospective Review

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Background

- Septic shock is a subset of sepsis complicated by elevated lactate or hypotension refractory to fluid resuscitation.
- In patients with septic shock and ongoing need for vasopressor therapy, corticosteroid therapy is recommended to be initiated.
- The recommended dose of hydrocortisone per the SSC is 200 mg per day. In contrast, the 2017 Guidelines for the Diagnosis and Management of Critical Illness-Related Corticosteroid Insufficiency (CIRCI) in Critically Ill Patients, recommends a hydrocortisone dose of < 400 mg/day for ≥ 3 days for patients with septic shock not responsive to fluid and moderate- to high-dose vasopressor therapy.

Need for Study

Both 50 mg Q6H and 100 mg Q8H dosing regimens are utilized for stress dose hydrocortisone therapy.

The purpose of this study is to determine the difference, if any, in shock outcomes between 200 mg and 300 mg hydrocortisone regimens.

Study Objectives

Primary Objective

- Shock reversal, defined as discontinuation of vasopressors for a minimum of 4 hours

Secondary Outcomes

- 28- and 90-day mortality
- Vasopressor requirements (time on vasopressors in hours)
- Shock recurrence

Safety Outcomes

- New infection
- Gastrointestinal bleed
- Hyperglycemia

Methods and Design

Study Design

- A retrospective chart review was conducted on patients admitted to CHN, CHE, CHS, or CHVH between January 1, 2016 and June 30, 2023.
- Two cohorts: Patients with septic shock who received 200mg hydrocortisone per day (50 mg Q6H) vs. patients with septic shock who received 300-mg hydrocortisone per day (100 mg Q8H)

Study Criteria

Inclusion Criteria	Exclusion Criteria
• Adults > 18 years of age • Septic shock (definition: MAP < 65) despite adequate fluid resuscitation • At least 48 hours of hydrocortisone therapy	• Adrenal insufficiency • Chronic steroid use • Pregnancy • Incarceration • COVID-19 infection • Patient expired within 48 hours of admission

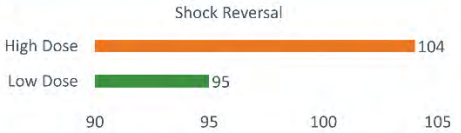
Statistical Analysis

- The study included 240 total patients, 120 patients per cohort, to meet power of 80% to detect a difference in primary outcome of 15%. Alpha was set at 0.05.
- Statistical tests: Pearson's Chi-square and Mann Whitney U

Baseline Characteristics

White	Early 60's	Community-acquired	SIRS 3 qSOFA 2

Primary Objective



Shock reversal was achieved in 95 patients (79.2%) in the low dose hydrocortisone group vs 104 patients (86.7%) in the high dose hydrocortisone group (p=0.123).

Secondary and Safety Outcomes

Secondary Outcomes:

Secondary Outcomes	Low dose	High dose	P value
28-day mortality, n (%)	51 (42.5%)	40 (33.3%)	0.143
90-day mortality, n (%)	61 (50.8%)	46 (38.3%)	0.051
Shock recurrence, n (%)	26 (21.7%)	28 (23.3%)	0.757

- No significant differences in mortality or shock recurrence outcomes were found.

Secondary Outcome	Low dose	High dose	P value
Vasopressor use, h [IQR]	76.4 [70.5]	64.4 [55.3]	0.021

- There was a statistically significant decrease in time on vasopressors observed with the high dose regimen.

Safety Outcomes:

Safety Outcomes	Low dose	High dose	P value
Hyperglycemia, n (%)	62 (51.7%)	54 (45%)	0.301
New infection, n (%)	5 (4.2%)	1 (0.8%)	0.098
GI bleed, n (%)	1 (0.8%)	1 (0.8%)	1.0

- No significant difference in any safety outcome was found.

Discussion

There was no difference between low and high dose hydrocortisone therapy on shock reversal; however, high dose therapy was associated with significantly lower time on vasopressor therapy.

Full Disclosure

The authors of this presentation have no possible or potential financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject of this presentation.

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Implementation of a Geriatric-Friendly Post-Op Order Set for Hip Fractures

Nicole Willer, PharmD; Angela Boyle, MSN, RN, FNP-C, GS-C

Community Health Network

Background

The American Geriatrics Society (AGS) Beers Criteria® outlines a list of medications to avoid in the geriatric population

In their 2019 Standards for Geriatric Surgery, The American College of Surgeons outlined standards for geriatric surgical care. They recommended the development of a standardized post-op order set eliminating the use of Beers® medications in an effort to prevent delirium.

CHNw does not utilize a protocol or order set for geriatrics in the surgical post-op setting.

Impact of Delirium

- surgical complications longer lengths of stay
- Increased risk of death
- Further cognitive decline
- Discharge to a postacute nursing facility

Objective

Standardize a post-op order set with geriatric-friendly medications, labs, and nursing measures.

Implementation

- **June 2023** – Enhanced ORT.04 developed
- **July 2023** – Providers Educated
- **August 2023** – Order set Go-Live

Medications for Patients 65+ Years Old

Scheduled Analgesia
Scheduled acetaminophen 650 mg PO / PR every 8 hours

PRN Mild Pain Medications: (Pain Scale 1-3)
Acetaminophen, PO / PR 650 mg every 6 hours PRN
Lidocaine 4% patch, transdermal every 24 hours PRN

PRN Moderate Pain Medications: (Pain Scale 4-6)
Hydrocodone-Acetaminophen 5-325 mg every 6 hours PRN
Oxycodone-acetaminophen 5-325 mg every 6 hours PRN
Tramadol 25 mg PO every 6 hours PRN

PRN PO Severe Pain Medications: (Pain Scale 7-10)
Hydrocodone-Acetaminophen 7.5-325 mg every 6 hours PRN
Hydrocodone-Acetaminophen 10-325 mg every 6 hours PRN
Oxycodone-acetaminophen 7.5-325 mg every 6 hours PRN
Oxycodone-acetaminophen 10-325 mg every 6 hours PRN

PRN IV Severe Pain Medications
Morphine 1 mg IV every 2 hours PRN severe pain
given only for severe break through pain unrelieved by PO

Vitamins
Multivitamin with iron
1 tablet PO daily
Ferrous sulfate EC
1 tablet 325 mg PO daily

Sleep Medications
Melatonin tablet 3 mg PO HS PRN sleep

Nursing Measures

Bedside swallow assessment
Post void residual
Orthostatic blood pressure
Assess for constipation
Assist with feeding patient
Anxiety / agitation assessment
Delirium assessment

Labs

CMP
CBC + Diff
Ammonia level
TSH with FT4 Reflex
Vitamin B12
Folate
Thiamine

Results

Order set used 137 times, age 65+ accounting for 75% of total utilization (n=183)

Length of stay reduced from 6.9 days to 5.8 days

5% reduction in positive CAM (Confusion Assessment Method) screenings

Conclusion and Future Plans

Utilization of a geriatric order set decreases the risk of post-op delirium

- Expansion to additional high-risk order sets
- Integration of geriatric assessments in pre-op
- Continued CHNw commitment to geriatric care

References

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Clinical outcomes following a change from beractant to poractant alfa for neonatal respiratory distress

Addison M Bray, Pharm D Candidate, Sarah Saft, PharmD, BCPS; Catherine Skoog, PharmD, BCPS; Chad A. Knoderer, PharmD, FPPA; Cindy Grande, RRT-NPS; Matthew Lewis, MD, FAAP

BACKGROUND

- Exogenous lung surfactant has been associated with decreased mortality and decreased progression to bronchopulmonary dysplasia (BPD) in neonates with respiratory distress syndrome (RDS)
- Beractant and poractant alfa have been used at Community Health Network North, which includes a 48-bed, level III neonatal intensive care unit (NICU)
- Community Health Network switched from beractant to poractant alfa in 2019 due to:
  - Better lung dispersion
  - Less manipulation
    - Not having to rotate the patient
    - Less volume so it is not administered in aliquots
  - Fewer doses needed

STUDY OBJECTIVE

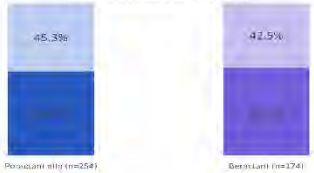
- Evaluate the efficacy and safety outcomes following formulary change from beractant to poractant alfa

METHODS

- Single center, retrospective cohort study of NICU patients with RDS who received at least one dose of:
  - Beractant between January 2017 to December 2018
  - Poractant alfa between January 2020 to December 2021
- Exclusion criteria:
  - Received both drugs
  - Received surfactant dose during transportation to the hospital
- Patients were categorized into gestational age (GA): ≥ 30 weeks or < 30 weeks
- **Primary Outcome:** BPD incidence, defined as an oxygen requirement at 28 days postnatal age or 36 weeks gestational age
- **Secondary Outcomes:** all-cause mortality, prematurity-related complications, and surfactant treatment costs
  - Prematurity-related complications include: intraventricular hemorrhage (IVH), patent ductus arteriosus (PDA), retinopathy prematurity (ROP), and pulmonary hemorrhage
  - Treatment cost is in terms of cost of drug
- Study was approved by Community Health Network and Butler University IRB

RESULTS

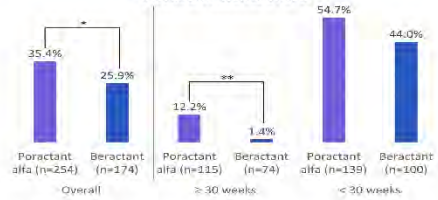
FIGURE 1. PATIENT POPULATION



- < 30 weeks is represented by a darker color in the respected surfactants while ≥ 30 weeks is noted as a lighter color

RESULTS

FIGURE 2. INCIDENCE OF BPD



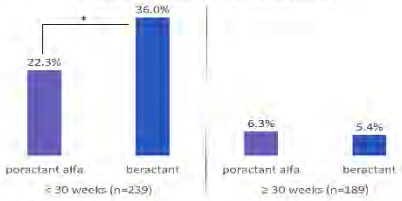
* p= 0.036
** p = 0.007

TABLE 1. PREMATURITY-RELATED COMPLICATIONS

	Poractant Alfa (n= 254)	Beractant (n=174)	p
IVH	38 (15.2)	40 (23)	0.042
PDA	48 (18.9)	28 (16.1)	0.456
ROP	84 (33.1)	50 (28.7)	0.342
Pulmonary Hemorrhage	8 (3.1)	2 (1.1)	0.178

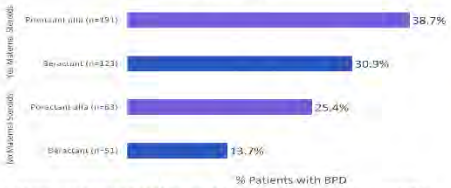
- Data reported as n(%)

FIGURE 3. PREVALENCE OF IVH IN GA GROUPS



* p = 0.02

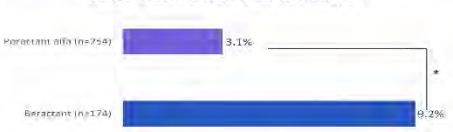
FIGURE 4. BPD INCIDENCE AMONG MATERNAL STEROID RECIPIENTS



- There was no significant association in BPD incidence between the surfactants when used with or without the combination of maternal steroids
  - No maternal steroids: p = 0.123
  - Yes maternal steroids: p =0.156

RESULTS

FIGURE 5. MORTALITY BETWEEN SURFACTANTS



* p = 0.008

- Within GA groups, there was a significant increase of mortality in < 30 week patients who received beractant (5% vs. 16%, p = 0.005)
- All beractant deaths (n=16) were in patients < 30 week GA
- One death in >/= 30 GA group and that patient received poractant alfa

TABLE 2. HOSPITAL-ASSOCIATED OUTCOMES

	Poractant Alfa (n = 254)	Beractant (n = 174)	p
< 30 weeks			
Dose	2 (1-3)	2 (1-3.75)	0.005
Cost	$1,392 (919.5-1864.4)	$755 (445.2-1006.24)	< 0.001
Ventilation Day(s)	6 (1-22)	5 (1-25.3)	0.760
Length of Stay(s)	86 (47-115)	84 (58.3-108)	0.755
≥ 30 weeks			
Dose	1 (1-2)	2 (1-2)	< 0.001
Cost	$1,839 (1417-2758)	$890 (445-1543)	< 0.001
Ventilation Day(s)	1 (1-2)	1 (1-3)	0.296
Length of Stay(s)	39 (20-56)	37 (14-50)	0.504

- Data is represented by median (interquartile range)

- Logistic regression demonstrated that poractant alfa administration (odds ratio [OR], 1.9; 95% confidence interval [CI], 1.2 - 3) and GA < 30 weeks (OR, 11.7; 95% CI, 6.5 - 21.4) were independently associated with BPD

DISCUSSION

- Poractant alfa
  - Higher incidence of BPD overall, notably in neonates ≥ 30 weeks
  - Increased risk of BPD two-fold
  - Decreased mortality, notably in neonates < 30 weeks
  - Increased cost of drug compared to beractant in both GA groups
- Beractant
  - Increased IVH incidence, notably in neonates < 30 weeks GA
- No significance difference observed for ventilation days and length of stay between the two surfactants
- No observed association in BPD between drug groups with mothers who did and did not receive steroids
- No association between drug groups and PDA, pulmonary hemorrhage, or ROP

CONCLUSION

- In this cohort, poractant alfa is:
  - An independent predictor of BPD
  - Associated with decreased mortality
  - Associated with higher drug cost compared to beractant

Retrospective Study on the Effectiveness of an Institution Specific Patient Risk Stratification Tool for Scheduling of Medicare Annual Wellness Visits with a Pharmacist

Morgan Dermody, PharmD, MBA, BCPS; Serena Kelley, PharmD, BCACP;
Chauntae Reynolds, PharmD, BCACP, CDCES; Jessica Willhoite, PharmD, BCACP

Community Health Network

Background

Per the Centers for Medicare and Medicaid Services, patients enrolled in Medicare plans are recommended to have Annual Wellness Visits (AWVs) once every 12 months to update Personalized Prevention Plans, perform Health Risk Assessments, and close care gaps. Care gaps may include overdue vaccines, annual screenings (DXA, Hepatitis C, colonoscopy), etc. In 1920, 1 in every 20 persons were age ≥ 65 years as compared to in 2020 where every 1 in 6 persons were age ≥ 65 years. Providers are increasing AWV visits, creating the need to identify patients who may benefit the most from a pharmacist-led AWV.

Reimbursement for Services[4,5]

- Interventions completed by pharmacists are reimbursable by CMS
- No significant difference exists in reimbursement rates between pharmacist vs physician lead Medicare AWVs.

Study Objectives

Primary Endpoint

- Rates "high-priority" patients seen by a pharmacist for their Medicare AWV pre- and post-implementation of scheduling risk stratification tool

Secondary Endpoint

- Care Gaps closed (including vaccines administered)
- Medication and coordination of care interventions performed

Methods

Design: retrospective chart review of Medicare AWVs from 1/1/23 – 12/31/23

Inclusion Criteria

- Adults ≥ 18 and ≤ 89 years of age with Medicare health insurance
- Medicare AWV completed by a pharmacist

Exclusion Criteria

- Pregnancy
- Incarceration

Risk Stratification Tool

- High-risk medications and disease states
- Number of medications
- Readmission risk (60-day)
- Encounters within 365 days

Results

Table 1. Baseline Information

	Pre-Implementation n=66	Post-Implementation n=54	p-value
Demographic Information			
Age, mean (SD)	71.68 (8.00)	70 (11.63)	0.3516
BMI, mean (SD)	30.83 (8.11)	32.83 (9.41)	0.2172
Female Sex, n (%)	48 (72.73)	37 (68.51)	0.688
White, n (%)	28 (87.5)	45 (93.8)	0.9791
Medication Information			
Medications, mean (SD)	17.47 (8.43)	15.8 (6.26)	0.2284
Patients with High-Risk Medication(s), n (%)	44 (66.67)	38 (70.37)	0.7988
Additional Care Information			
Value Based Care, n (%)	41 (62.12)	34 (62.96)	0.8512
PharmD on Care Team prior to AWV, n (%)	15 (22.72)	15 (27.78)	0.2728
History of PharmD AWV, n (%)	24 (36.36)	20 (37.03)	0.2728
Care Gaps open, n (%)	35 (53.03)	30 (55.56)	0.2177
Vaccines due, n (%)	45 (68.18)	43 (79.63)	0.3660

Table 2. Endpoints

	Pre-Implementation n=66	Post-Implementation n=54	p-value
Primary Endpoint			
Priority level, n (%)			0.6572
High-Risk	10 (15.15)	7 (12.96)	
Moderate-Risk	16 (24.24)	10 (18.52)	
Low-Risk	40 (60.60)	37 (68.52)	
Secondary Endpoints			
Care Gaps Closed at AWV	35 (100)	30 (100)	----
Referrals Placed	9 (13.64)	3 (5.56)	0.2214
Additional Labs Ordered	10 (15.15)	6 (11.11)	0.5963
Adherence Barriers Addressed	3 (4.55)	1 (1.85)	0.6263
Overdue Vaccines Administered	14 (31.11)	15 (45.45)	0.8176
Medications interventions, n (%)	*n = 9*	*n = 12*	0.4034
Medications started	4 (44.44)	9 (75.00)	
Medications stopped	5 (55.56)	4 (33.33)	
Medication dose change	0 (0.00)	1 (8.33)	
Medications refused	0 (0.00)	1 (8.33)	
High Risk Medication (HRM) Intervention, n (%)	*n = 9*	*n = 12*	0.049
HRM Started	0 (0.00)	3 (21.43)	
HRM Stopped	0 (0.00)	2 (14.29)	
HRM Dose Adjusted	1 (1.11)	0 (0.00)	

Disclosure

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

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Discussion

Strengths
- Baseline characteristics and medication use
- Baseline pharmacist care

Limits
- Available only to central scheduling
- Patients are refusing care from providers other than their PCPs
- Team priorities

Summary
- Did NOT result in significantly higher rates of "high-priority" Medicare AWV patients seen by a pharmacist

Mental Healthcare Utilization Among Transgender Individuals in a Community Psychiatric Hospital

Kaitlyn Kastberg, PharmD, BCPS[1,2]; Vijai Kumar Dharla, MD[1]; Laura Ruekert, PharmD, BCPP, BCGP[1,2]

Community Health Network

BUTLER UNIVERSITY

Background

- Historically, pubertal suppression was considered at age 12, gender affirming hormone therapy (GAHT) was considered at age 16, and surgical interventions were considered after age 18. More recent recommendations suggest initiating GAHT as young as 14.[1]
- Current literature of gender-affirming care and mental health outcomes is largely limited to self-reported improvement, anxiety/depression scoring (e.g. GAD-7, PHQ-9, etc.), or focused on gender-affirming surgery.[2-4]
- While the WPATH guidelines work to eliminate unnecessary barriers to care, recent legislation opposes these efforts. Indiana Senate Bill 480 prohibits gender transition procedures and treatments for minors in Indiana.[5]

Objectives

Primary Endpoint

- The difference in 90-day readmission rates between transgender individuals who are on GAHT versus not on GAHT

Secondary Endpoints

- 30-day readmission rates
- Time to readmission
- Hospital length of stay
- Psychotropic medication utilization

Methods

- A retrospective chart review from May 1, 2019 – June 30, 2023

Inclusion Criteria

- Age ≥ 14 years old
- Patients who identify as transgender
- Admitted to an inpatient behavioral health unit

Exclusion Criteria

- Age > 89 years old
- Pregnancy
- Incarceration
- History of gender-affirming surgery
- Puberty blocker therapy alone

Results

Figure 1: Patient Demographics

	GAHT (n = 50)	Non-GAHT (n = 126)	P-value
Age, mean (range)	26.8 (15-66)	19.3 (14-52)	<0.005
Transgender Male, n (%)	30 (60%)	100 (79.4%)	0.0084
White, n (%)	44 (88%)	92 (73%)	0.032
Gender Dysphoria Diagnosis, n (%)	14 (28%)	43 (34%)	0.433
Insurance			0.377
-Medicaid	17 (34%)	57 (45%)	
-Federally Funded	5 (10%)	7 (6%)	
-Commercial	27 (54%)	57 (45%)	
-None	1 (2%)	5 (4%)	

Figure 2: Primary and Secondary Endpoints

	GAHT (n=50)	Non-GAHT (n=126)	P-value
90-day readmission, n (%)	5 (10%)	41 (32.5%)	0.002
30-day readmission, n (%)	2 (4%)	21 (16.7%)	0.025
Initial LOS, mean (range)	5.16 (1-15)	6.29 (1-20)	0.027
	GAHT (n=5)	Non-GAHT (n=41)	P-value
Time to readmission, mean (range)	31.8 (8-52)	37.4 (2-89)	0.645
Readmission LOS, mean (range)	6.4 (3-11)	10.9 (2-78)	0.091

Figure 3: Psychotropic Medication Utilization

	GAHT (n = 50)	Non-GAHT (n = 126)	P-value
Number of Meds at Admit, mean (range)	2.72 (0-8)	2.75 (0-7)	0.909
Number of Meds at Discharge, mean (range)	3.42 (0-6)	3.4 (0-7)	0.948
Net Change in Number of Psychotropics, n (%)			0.522
-Increase	29 (58%)	63 (50%)	
-Decrease	3 (6%)	13 (10%)	
-No Change	18 (36%)	50 (40%)	
Patients with at least one new med, n (%)	37 (74%)	84 (66.7%)	0.344
Patients with an antipsychotic added, n (%)	15 (30%)	40 (31.7%)	0.822
Patients with an antidepressant added, n (%)	18 (36%)	40 (31.7%)	0.588
Patients with an anxiolytic added, n (%)	13 (26%)	27 (21.4%)	0.514
Patients with a mood stabilizer added, n (%)	7 (14%)	11 (8.7%)	0.298

Disclosure

The 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.

Discussion

Strengths

- Unique study endpoints
- Demonstrates benefit that directly opposes current legislation
- Interdisciplinary collaboration

Limitations

- Retrospective chart review
- Statistically significant differences in baseline characteristics
- Not all EMRs interface with Epic

Summary

- Patients not on GAHT were more likely to be readmitted within 30 and 90 days and have a longer LOS for their index hospitalization.
- Psychotropic medication utilization was similar between groups

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Community Health Network[1]; Butler University College of Pharmacy and Health Sciences[2], Indianapolis, Indiana

ORAL PRESENTATIONS

O1 Time of Prior Authorization Decision Compared to Literature at Community Health Network.

(Allison Berryman, PharmD; Lauren Kuckewich, PharmD, MBA, BCPS; Heidi Barnett, PharmD, BCACP)

Introduction: Over the past decade, the use of prior authorization (PA) by health insurance companies has been on the rise. This process can take days to weeks to process as providers have to fill out the information needed by insurance companies. This can lead to a gap in patient care, including delayed or disrupted treatment.
Specialty pharmacies are utilized for the dispensing of high cost and uncommon medications for patients with complex disease states. Due to the type of medications these pharmacies handle, numerous PAs are seen throughout the workday. Having staff who are trained and knowledgeable about completing PAs can speed up the processing time leading to a shorter gap in patient care.
Since January 2023, Community Health Network's specialty pharmacy (CHNSP) has had technicians who are trained to complete and submit PAs on behalf of providers. This allows providers to be able to focus more on patient care and less on unnecessary paperwork. Another benefit is PAs are completed and submitted as soon as they come in to allow for quicker patient availability. This study will describe the average time to PA decision for CHNSP compared to literature. It will also be looking at different factors that could affect PA approval time including location, different insurance companies, and medications within the network.
Methods: Data will be collected through a retrospective claim review of patients who are seen at Community Health Network who needed a PA for insurance to cover their medication. This review will consist of at least 500 claims processed through Community Health Network's Specialty Pharmacy from January 2023 to September 2023. To be included in this study, patient's had to be a Community Health Network patient who sees a provider within network, is 18 years of age and older, and their insurance company requires a prior authorization in order for them to pay for the medication. Patients were excluded if they were ≥ 89 years of age, < 18 years of age, and pregnant women, those who are cognitively impaired, prisoners, economically or educationally disadvantaged people, and students or employees will not be exclusively sought after and recruited.
Results: To be presented at the 2024 Multidisciplinary Scholarly Activity Symposium.
Discussion: To be presented at the 2024 Multidisciplinary Scholarly Activity Symposium.

O2 A Retrospective Study of Obesity and Overweight Treatment and Outcomes in Primary Care.

(Sarah Lowe, PharmD; Benjamin Yu, PharmD, BCACP; Sarah Kain, PharmD, BACAP; Nick Sciacca, PharmD, BCACP)

Purpose: Rising levels of obesity in the United States has led to increased drug development for weight management. Pharmacist led weight management services have aided in patient success with weight management therapies. The purpose of this study is to assess a pharmacist-managed weight loss collaborative agreement across Community Health Network, in coordination with the nurse care navigators.
Methods: This study is designed to be a retrospective chart review. The primary objective of this study is to determine the change in total body weight lost (% change) in patients seen by clinical ambulatory

care pharmacist for weight loss vs those seen only by their PCP vs those seen for initial visit by a clinical ambulatory care pharmacist and followed by nurse care navigators. Key secondary objectives, to be compared across 3 groups (physician, pharmacist, or care navigator), are to analyze change in weight, lipid parameters, blood pressure, and A1c. Additional key secondary endpoints include percent of patients meeting >5% baseline weight loss at 3 and 6 months and barriers to weight loss. Patients will be identified based upon reports for patients seen for weight management at Community Physician Group offices between 5/1/23 to 11/24/23. Patients will be eligible for inclusion if they are greater than or equal to 18 years of age on pharmacologic weight management therapy, and have a body mass index ≥30 kg/m2, or ≥27 kg/m2 with weight-related complications (hypertension, hyperlipidemia, type 2 diabetes, or obstructive sleep apnea). Key exclusion criteria include patients who are pregnant. The results of this study will be analyzed using ANOVO test and descriptive statistics.
Results and Conclusion: To be presented at the 2024 Multidisciplinary Scholarly Activity Symposium.
Discussion: To be presented at the 2024 Multidisciplinary Scholarly Activity Symposium.

O3 Assessment of ECG Monitoring and QTc Interval Prolongation in Patients Receiving Ribociclib.

(Sarah Abu-Salih, PharmD; Tina Keller, PharmD; Chelsea Gustafson, PharmD, BCOP; Lindsey Koch, PharmD, BCOP)

Introduction: Ribociclib, in combination with endocrine therapy, was approved by the US Food and Drug Administration (FDA) for the treatment of metastatic ER/PR+, HER2- breast cancer on March 13, 2017. In clinical trials, prolongation of the corrected QT (QTc) interval by greater than 500 milliseconds (ms) was noted in 1.4% of patients, while 6% of patients saw a 60 ms increase or greater. The purpose of this study is to evaluate adherence to the manufacturer's recommended electrocardiogram (ECG) monitoring for ribociclib. Additionally, to further comprehend the need for ribociclib's ECG monitoring, this study intends to quantify real-world rates of QTc interval prolongation associated with the use of this agent. The results of this study may guide future quality improvement projects in identifying strategies to improve compliance to ribociclib's recommended ECG monitoring requirements.
Methods: Data will be collected through retrospective chart review of patients initiated on ribociclib at Community Health Network MD Anderson Cancer Centers. The chart review will be compromised of a query of ribociclib prescriptions from March 13, 2017 through August 31, 2023. Retrospective data collection through chart review will occur for the time period of January 30, 2017 through December 1, 2023. An estimated 65 patients who were 18 years or older and received ribociclib prescriptions prescribed and managed by providers within the network will be included in this study. Patients who were pregnant, incarcerated, or over the age of 89 years old were excluded. The primary objective is to assess the proportion of patients who received ECG monitoring after starting ribociclib at each time interval that it is recommended by the manufacturer. Secondary objectives include the proportion of patients with Common Terminology Criteria for Adverse Events (CTCAE) v5.0 grade 2 or higher QTc interval prolongation after initiation of ribociclib and the percent of patients that had an interruption or dose adjustment of ribociclib due to QTc interval prolongation.
Results: To be presented at the 2024 Multidisciplinary Scholarly Activity Symposium.
Discussion: To be presented at the 2024 Multidisciplinary Scholarly Activity Symposium.

O4 **Nonoperative Treatment of MCL Tears in ACL/MCL Injuries Does Not Increase ACL Retear Rates.** (Scot Bauman, PT, DPT, PhD; Rodney Benner, MD; K Donald Shelbourne, MD; Bill Claussen, PT)

Introduction: There continues to be controversy regarding the treatment of medial collateral ligament (MCL) tears when torn in conjunction with the anterior cruciate ligament (ACL). There is a push to acutely operate on the MCL in this setting due to lower revision rates following the ACL reconstruction (ACLR). The purpose of this study was to determine if there was a difference in ACL retear rates or postoperative stability between those with ACL/MCL injuries and isolated ACL injuries when the MCL was treated nonoperatively, with possible casting, prior to the ACLR. Our hypothesis was that those with ACL/MCL tears would have similar retear rates and postoperative stability compared to those with isolated ACL tears.
Methods: Between 1982 and 2022, 6047 patients planning to have an ACLR were enrolled into the study based on the following inclusion criteria: primary ACLR using a patellar tendon graft with minimum one year follow up. Patients were excluded with revision ACLR, lateral side or posterior cruciate ligament involvement, or lacking postoperative KT data. Patients were divided into two groups, isolated ACLR (N = 5670) and ACL/MCL (N = 377). Patients in the ACL/MCL group were initially treated nonoperatively to get the MCL to heal and if needed, were casted with the knee in 30° of flexion and changed weekly until a solid end point was achieved and patients had the ability to bear full weight. Once these goals were attained, preoperative rehabilitation was commenced, and range of motion was normalized before the ACLR. Postoperatively, all patients followed the same accelerated rehabilitation program.8 The KT manual maximum (MM) difference between knees, in millimeters, was used for analysis. Graft retear rate was determined through subjective surveys sent yearly to each patient after surgery. To reduce confounding bias in the analysis, the ACL/MCL patients were control matched 1:1 to the isolated ACL injury patients based on sex, age, postoperative activity rating, and surgery timing, which led to 304 patients in each group.
Results: After matching, the mean age for both groups was similar (ACL/MCL: 24.6 years, isolated ACLR: 24.9 years) and they showed identical rates of males, postoperative activity rating ≥7, and subacute surgery at 66.4%, 90.4%, and 73.0%, respectively. The KT MM difference for the ACL/MCL group was not statistically significantly different when compared to the isolated ACLR group (1.8mm vs 1.6mm; p=0.196). The ACL retear rate for the ACL/MCL group was 7.9% compared to 6.6% for the isolated ACLR group, which was not statistically significantly different, p=0.531.
Discussion: When the torn MCL is treated nonoperatively through casting before an ACLR, postoperative stability and rates of ACL retears are similar to those with an isolated ACL tear. Surgery for the MCL, in ACL/MCL injuries, can be avoided as nonoperative treatment with a cast and rehabilitation before an ACLR yields similar outcomes when compared to those with isolated ACL tears.

O5 **The Impact of Diagnosed Chronic Sleep Disorders on Outcomes Following Total Knee Arthroplasty** (Scott Bauman, PT, DPT, PhD; Rodeny Benner, MD; Adam Norris, BS)

Introduction: Up to 20% of patients undergoing primary total knee arthroplasty (TKA) for knee osteoarthritis (OA) remain dissatisfied with their outcome, which has led to the identification of potential risk factors for this outcome. This study aimed to analyze the effect of chronic sleep disorders on outcomes after primary TKA, utilizing the Knee injury and Osteoarthritis Outcome Score (KOOS). Our hypothesis was that those with diagnosed sleep disorders would report worse outcomes after surgery compared to those without a diagnosed sleep disorder.

Methods: A retrospective review of patients undergoing primary TKA was conducted using a database of patients from a single institution between 2018-2022. Exclusion criteria were revisions, bilateral procedures, staged procedures within 12 months of each other, and postoperative complications requiring a return to the operating room. The cohort was split based on the presence of documented chronic sleep disorders (sleep apnea, insomnia, narcolepsy, and restless leg syndrome), identified preoperatively from the electronic medical record using CPT codes. The sample was further restricted to include all patients with sleep disorders (SD), as well as a 3:1 propensity matched (on age, gender, body mass index (BMI), and American Society of Anesthesiologists (ASA)) cohort of patients with no documented sleep disorders (NSD) prior to surgery. Surveys were administered preoperatively and at 1, 2, 6, and 12 months postoperatively. Repeated measures linear mixed model analysis was used to analyze the progression of scores through time between groups.
Results: The final sample included 172 patients (SD: 43; NSD: 129). Those with SD had a lower preoperative mean total KOOS score (40.2) compared to the NSD group (44.1), p=0.108. Preoperatively, the five KOOS subdomains were lower for the SD group, however only significantly lower for KOOS-ADL (p=0.041). At one year postoperative, those with SD had a significantly higher mean total KOOS score (87.2) when compared to the NSD group (80.4), p=0.005. Also, at one year postoperative, the KOOS subdomains of symptoms, sport, and QoL were statistically significantly higher for the SD group, all p≤0.038. When comparing total KOOS scores by group, over time, the SD group showed a better progression when compared to the NSD group, p=0.001. The KOOS subdomains of symptoms, ADL, sport, and QoL also showed a statistically significantly better progression through time, favoring the SD group, with each one p≤0.007. The KOOS subdomain of pain showed a better progression over time for the SD group compared to the NSD group, however this was not statistically significantly different, p=0.066.
Discussion: Compared to patients without documented chronic sleep disorders, patients with a prior history of chronic sleep disorders reported significantly greater improvements in most KOOS domains after TKA. Patients with SDs can report worse function preoperatively, however, end up with superior scores compared to those without SDs after surgery, therefore proper education on expectations can be given to this population prior to surgery.

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

Introduction: Structural abnormalities, such as meniscus tears and chondral injuries, seen at the time of an anterior cruciate ligament (ACL) reconstruction, can lead to unfavorable outcomes following surgery. Additionally, a lack of full knee extension in the short term has been shown to lead to poor short term outcomes. However, long term outcomes based on knee extension are unknown as they are typically judged with subjective data only. The purpose of this study was to determine long term functional outcome differences after an ACL reconstruction, for those with varying structural abnormalities, based on normal and abnormal knee extension.
Methods: Between 1982 and 2012, 3382 patients having an ACL reconstruction 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 split into four groups based on structural abnormalities, normal (group 1), meniscus tear (group 2), chondral injury (group 3), and a combination of meniscus tear and chondral injury (group 4). Patients followed up for data collection and radiographs at a minimum 10 years postoperative. Abnormal knee extension was defined as more than 2° off compared to the noninvolved knee, per the International Knee Documentation Committee (IKDC)

objective criteria. The IKDC subjective was collected, and radiographs were graded based on the medial and lateral compartment. Additionally, short term knee extension at 2 months postoperative was compared to long term knee extension.
Results: Of the 3382 patients, 903 (27%) had subjective, objective, and radiographic data at a mean 17.7 ± 6.2 years (range, 10-39). 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 ($p<.001$). The rate of moderate to severe knee OA for groups 1-4 was 6%, 12%, 18%, 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, 4% vs 23%; 2, 9% vs 29%; 3, 14% 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 4.8 times more likely to have OA compared to those with normal extension, which is more than the 2.1 times the likelihood with meniscus tears and 2.7 times the likelihood with chondral injuries.
Discussion: Abnormal knee extension early after surgery can negatively affect knee extension long term as those that are lacking motion early rarely have normal knee 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 knee extension. A loss of knee extension long term results in more negative outcomes than meniscus tears or chondral injuries.

O7 **Global Health Rotation QI Project.** (Petr Sliva, MD; Flavian Mokeyo, MD; Ebony Brown, MD; Aria Arrizabalaga, MD)

Introduction: It is not standardized in the medical training curriculum to travel to countries and provide medical care in lower resource settings where health disparities are more evident. Indianapolis is fast becoming more culturally diverse and people from all over the globe now call this city home. Moreover, there is an increasing demographic of medically underserved patients within the city. Therefore, there is an increased need to develop physicians who are proficient in providing culturally sensitive medical care and work in a global context. For those physicians who have had global health experiences, the question was posed if this experience has been relevant in shaping how they work, provide and implement medical care.

Methods: A cross sectional survey will be used to investigate if global health experiences enhance the skill set of a physician in terms of working with multidisciplinary teams, providing culturally sensitive medical care and utilization of resources. Participants include adults 18 and older who provide patient care and have taken part in a global health experience in the past. Participants will be asked to fill out a research questionnaire using the Likert scale to collect data.

Results: To be presented at the 2024 Multidisciplinary Scholarly Activity Symposium. Data will be collected from research questionnaires and grouped under 3 broad areas: Cultural Competency, Working in resource limited areas and Multidisciplinary teams. It will be analyzed to show if global health experiences have made participants develop skillsets to work in a multicultural, diverse and global environment.

Discussion: Analysis of data to be presented at the 2024 Multidisciplinary Scholarly Activity Symposium. Findings will inform policy on developing and implementing robust global health tracks/rotations within residency programs and attract residents to participate in these rotations.

O8 **Ambulatory Penicillin Allergy Panel.** (Tamer Tamer, MD, MBA; Jacob Collins, MD; Tyler Vernon, MD; Andrew Brougher, MD)

Introduction: Documented penicillin allergies contribute to an increased use of second-line antibiotics, resulting in adverse outcomes for the general population. According to the CDC, The heightened utilization of broad spectrum antibiotics increases risk of drug-resistant organisms, Clostridium difficile infections, unnecessary toxicities, and incurs additional hospital costs (CDC, 2017). This study investigates the degree to which a typical outpatient patient panel has a reported penicillin allergy to determine if it would be relevant to consider a future study to obtain penicillin allergy testing. Penicillin allergies will be identified via listed allergies, however those with confirmed anaphylaxis will be excluded from the study.
Methods: A retrospective chart review will be completed via Slicer-Dicer, comparing the percentage of patients from residency patient panels to those of the national and state averages. Thereafter, a comparison will be made in order to determine if the residency patient population has a similar percentage or clinically significant difference. There is an estimated patient panel of 7000 with an approximate 10%, or 700, having a documented penicillin allergy.
Results: Data not collected yet, pending IRB approval.
Conclusion: No formal conclusions have been made given pending study completion. Based on the preliminary literature review, it is expected that the results will show that our patient panel either meets or exceeds similar values to that of the state and national averages and would likely benefit from a further study performing penicillin allergy testing.

O9 **A Difficult Conversation –Screening for OSEC in the Healthcare Setting: A Qualitative Study on Tools and Approaches.** (Elizabeth Ziff, PhD; Toni Morris, DNP, RN, CNE; Brandon Doty, MA; Courtney Nelson, BA; Vanesa Orosco, BA; Alexi Hahn, BA; Trey Gottman, Student)

Introduction: Online sexual exploitation of children (OSEC) refers to the sexual abuse of minors that can be broadcast via the internet, which includes but is not limited to the creation, dissemination, or possession of sexual material involving children.
OSEC is a major public health issue around the world that, for most, is a very difficult and sensitive topic to discuss in a public or private manner. Children are increasingly vulnerable to online predators with a sexual interest in children who use the internet to groom, exploit, and abuse them. The long-term consequences of any form of child abuse can be devastating and early identification and providing support as soon as possible is critical. Children at risk for OSEC face a serious threat to their physical and emotional well-being. The proliferation of digital technology and the rise of social media have made it easier for perpetrators to exploit children online. With more and more children using the internet and social media, the risk of OSEC is increasing at a rapid pace. Given these challenges, there is an urgent need for effective measures to prevent and respond to OSEC. This includes normalizing difficult conversations, providing education and resources to stay safe online, as well as empowering parents and guardians with the knowledge and tools they need to protect their children.

Healthcare professionals have a unique opportunity to provide preventative education and screen patients and families who may be at risk. Providers are figures of authority to both parents and children and are also who parents entrust with the health of their children. It stands to reason that healthcare professionals are in a position to normalize talking about OSEC, educate the families they work with on what to look for, and screen patients for exposure. This study aims to gather insight from healthcare professionals regarding their knowledge level of OSEC, questions they would be open to asking when screening for OSEC, and what they perceive their role to be concerning this topic.
Methods/procedures: Healthcare professionals will be recruited via convenience sampling, personal networks, and snowball sampling to participate in an interview gauging their knowledge of OSEC, their opinion on how best to screen and educate about the topic, and gauge their perceived level of responsibility in intervening. Recruitment will take place via purposive, convenience sampling of healthcare professionals and the researchers' networks. Data will be analyzed using open, axial, and selective coding for a thematic analysis.
Results- forthcoming
Discussion/implications for practice: It is predicted that by exploring healthcare professionals' perspectives and preferences, the research could lead to valuable recommendations for the development of a tool that is suitable for OSEC screening. The findings of this study could then be used to successfully implement an effective screening tool that could contribute to the early detection of OSEC cases. Additionally, we anticipate that it could shed light and enhance healthcare professionals' comfort levels in approaching these topics with their patients and potentially improve the overall management of OSEC in healthcare settings.

O10 Not So Obvious Shoulder Pain in a Young Athlete. (Patrick Feeney, DO; Ashlee Warren, MD)

Introduction: Patient is an 18 year old female who endorses 3 weeks of worsening right shoulder pain. She is a softball player who plays center fielder. She is right hand dominant. Pain radiates from shoulder to elbow. Pain worsens with use of the shoulder, but pain is also present at rest. Denies any injury. Endorses associated numbness and tingling of entire hand and swelling of her arm with discoloration of the hand. She is no longer able to throw the ball from center field to home plate, which she previously could. She has been wearing a sling and taking ibuprofen without relief. No prior shoulder issues or injuries before this incident.
Inspection: Mild swelling and slight discoloration of the fingers compared to the left hand. No engorgement of the veins noted. Palpation: Globally tender. ROM: Forward flexion and abduction 180 with pain and internal rotation T10 with pain. Strength: Deltoid, Supraspinatus, Infraspinatus/Teres minor, subscapularis 4+/5. Positive Neer, Hawkins, Obriens, Roos, and Adsons. Negative empty can and spurlings.
Differential Diagnosis:
Paget-Schroetter Syndrome - Venous Thoracic Outlet
Impingement syndrome
Rotator cuff tendinitis
Cervical radiculopathy
Rotator cuff tear
Test and Results: XR Right Shoulder: joint spacing and alignment are appropriate without any acute abnormality. Venous duplex US upper extremity: Non compressible DVT of right subclavian vein Labs: Antithrombin activity, protein c and s, cardiolipin antibodies, beta-2 glycoprotein antibodies, and aptt la all normal. Slightly elevated DRVVT confirmatory ratio at 1.4 with 1.2 upper limit of normal.

Final/Working Diagnosis: Paget-Schroetter Syndrome – Venous Thoracic Outlet Syndrome
Treatment options: Anticoagulation for minimum of 3 months regardless. Thoracic outlet decompression (1st rib resection) with preceding thrombolysis. Percutaneous transluminal angioplasty after thrombolysis. PT with intermittent anticoagulation dosing, which would require athlete return to play acknowledgement of medical condition, potential injury, and informed consent form, a DOAC treatment plan, and a DOAC drug intake schedule. This strategy may be difficult to implement with multiple games per week and blood draws needed. Would also raise concern if trauma occurred during the game, when to take next dose of anticoagulation.
Outcome: Started on xarelto for 3 months, consult to hematology placed, cease all physical activity and softball. Hematology consulted vascular surgery. Had venogram and angioplasty of subclavian vein with narrowing of subclavian vein improving after procedure. Discussed PT vs right 1st rib trans axillary resection, patient chose to proceed with PT with prophylactic xarelto dosing.
Return to activity and follow up: With no rib resection, patient chose PT with prophylactic anticoagulation and plans for intermittent coagulation dosing strategy, which will require continued follow up with hematology. If she had first rib resection, she could start PT 2 weeks after procedure and usually progress back to sport on average at 4-5 months post procedure, and wean off of anticoagulant after 3 months of use.

O11 Antibiotic Beads in Treatment of Lower Extremity Infections and Wound Dehiscence.

(Nathan Namanny, DPM; Rachel Martin, DPM)

Introduction: The use of antibiotic beads has been a longtime modality for treatment of infection involving arthroplasty or fractures. Having been around since 1979 they have been a mainstay in treatment for prosthetic joint infection or osteomyelitis. However, the original PMMA (polymethyl methacrylate) beads are non-absorbable and require a second surgery to remove them. Over the last 20 years, new bead technologies have been developed. One of which has been calcium sulfate beads. These beads are absorbable and have the same, if not better, results in killing bacteria. Wound drainage has been a widely reported complication with surgically implanted beads. It is unclear if this wound drainage leads to full wound dehiscences and the need for further surgical revisions. The purpose of this study is to determine the rate of full wound dehiscence with implantation of calcium sulfate beads, in patients undergoing surgery for osteomyelitis of the foot and ankle.
Methods: In this retrospective, chart review study, 50 randomly selected patients who underwent calcium sulfate bead implantation for osteomyelitis of the foot and ankle were analyzed to determine wound dehiscence rates, time to healing of dehiscences, and further surgical interventions needed. This was compared against 75 randomly selected patients treated for osteomyelitis of the foot and ankle.
Results: To be presented at the 2024 Multidisciplinary Scholarly Activity Symposium.
Discussion: To be presented at the 2024 Multidisciplinary Scholarly Activity Symposium.

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