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Physician Category

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Family Medicine

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Rare Case of Hemangioma of the Vallecula

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Introduction

Hemangiomas are benign vascular tumors commonly found in the head and neck region, but their occurrence in the vallecula is relatively rare. This case report presents a unique instance of a hemangioma in the left vallecula of a 42-year-old female, a location where such lesions are uncommon. Typically, hemangiomas in the adult population are less frequently reported compared to pediatric cases, adding to the distinctiveness of this case.

Figure 1

Intervention and Outcomes

The intervention and outcomes of treating a hemangioma in the vallecula can vary significantly depending on the technique used. Here, we have two methods: the use of a direct laryngoscope with excision of the hemangioma using coblation (cobalt ion) techniques, and the use of a CO2 laser with suction bovine for hemostasis. Coblation results in less thermal damage to surrounding tissues, reduced postoperative pain and quicker recovery. There's also potentially less risk of bleeding due to the low-temperature technique.
The CO2 laser is known for its precision, which can be crucial in sensitive areas like the vallecula. The risk of bleeding is minimized, and recovery can be rapid due to the minimal invasiveness of the procedure. However, there may be risks of thermal damage to adjacent tissues and a higher skill threshold for the surgeon.

Abstract

Vallecular masses represent a rare and diverse group of pathologies, characterized by their unusual occurrence and wide-ranging origins. These masses can be uniquely located within the vallecula or extend from neighboring anatomical structures such as the base of the tongue, lingual tonsils, epiglottis, palatine tonsils, and other parts of the supraglottis. This complex nature of vallecular masses poses unique challenges in diagnosis and management, making them a significant point of interest in otolaryngology and related medical fields.

Diagnostic Assessment

MRI neck performed and showed enhancing lesion along the left vallecula and base of tongue that measured 1.6 x 1.2 cm in greatest dimension with small amount of mass effect on the epiglottis.

Conclusion

This case underscores the importance of considering hemangiomas in differential diagnoses for adults presenting with globus and foreign body sensations in the throat. It also sheds light on the diagnostic and management challenges associated with these rare presentations.Understanding the various differential diagnoses and interpreting the imaging findings are crucial for diagnosis and treatment .

BayCare

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Case Report

42-year-old female, previous smoker, presented with symptoms of cough and a sensation of a foreign body in the throat but without any dysphagia or shortness of breath. Examination revealed purple, well demarcated mass at the left vallecula. MRI neck and direct laryngoscopy confirmed left vallecular hemangioma.

Intervention and Outcomes

The patient was referred to ENT and underwent direct laryngoscopy with excision of left vallecula lingual tonsill hematoma. She experienced a successful postoperative course with no complications. There was complete resolution of symptoms following the surgery.

Conflict of interest

Conflict of Interest: None

Reference

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Effects of a 7-Day Heat Acclimation on Preseason Practices in Division 1 Women Lacrosse Players: A Pilot Study

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USF Health

INTRO:

- Exertional heat illness is the third leading cause of death in US athletes.
- Despite an increase in popularity of women's lacrosse in the US, there are no studies on measures of heat stress and hydration in collegiate female lacrosse athletes.
- The purpose of this study was to examine the thermoregulatory and hydration measures of Division 1 women's lacrosse athletes during practices in indoor and outdoor facilities and to assess the efficacy of a 7-day acclimatization protocol in the heat lab.

METHODS

1. 12 Division 1 women's lacrosse athletes participated in the study. (Age = 19+/-1y, ht=166.6+/-6.1cm, wt=65.5+/-7.6kg, BMI=23.6+/-2.1)
2. 6 athletes acclimated for 7 days in the heat chamber (WBGT=31.2 C +/- 1.9 C) while cycling (metabolic rate=28.15+ 10ml.kg.min) for one hour.
3. Gastrointestinal temperature (Tgi), heart rate (HR), urine specific gravity (USG), urine color (Uc), urine osmolality (Uosm), percent body mass loss (%BML), and sweat rate were assessed during acclimation and at three practices; one indoors (WBGT=20.4+/-0.8 C, 60 min) and two outdoors (WBGT=32.5+/-1.7 C and 28.9+/-1.5 C 120 and 105 min, respectively)
4. Multivariate analysis of variance was used to determine differences between groups, differences between indoor and outdoor practices, and any interaction, p value was <0.05

Subject Demographic Data

	Age	Height (cm)	Weight (kg)	BMI
Acclimated	18± 1	168.9± 3.8	67.4± 7.5	23.6± 2.3
Control	19± 2	164.3± 0.1	63.7± 7.8	23.6± 2.2

Fluid Intake and Sweat Loss During Practices

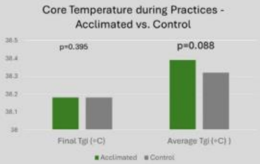
	Fluid in (mL)	Sweat Rate (mL)
Acclimated	761.26±618.11	1102.47±968.27
Control	807.89±557.11	1052.33±596.42
p-value	0.816	0.854

Heart Rate and Core Temperature During Practices

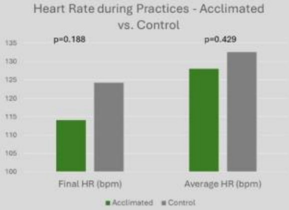
	Final Heart Rate (bpm)	Average Heart Rate (bpm)	Final Core Temperature (◦C)	Average Core Temperature (◦C)
Acclimated	114±19	128±17	38.18±0.63	38.39±0.76
Control	124±26	132±17	38.18±0.48	38.32±0.39
p-value	0.188	0.429	0.395	0.088

Post- Practice Urinary Hydration Measures

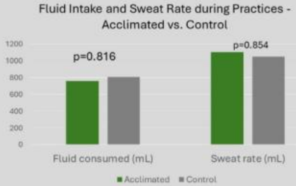
	Urine Color	Urine Specific Gravity	Urine Osmolality
Acclimated	5±1	1.017±0.0057	580.36±214.90
Control	6±2	1.020±0.0077	677.18±267.52
p-value	0.156	0.210	0.245



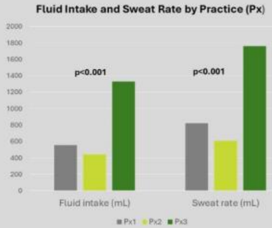
Core Temperature during Practices - Acclimated vs. Control



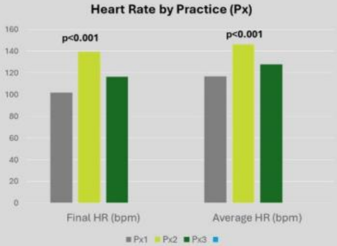
Heart Rate during Practices - Acclimated vs. Control



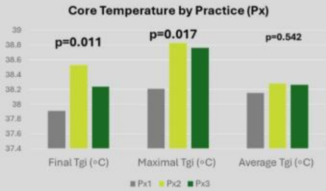
Fluid Intake and Sweat Rate during Practices - Acclimated vs. Control



Fluid Intake and Sweat Rate by Practice (Px)



Heart Rate by Practice (Px)



Core Temperature by Practice (Px)

RESULTS

- There were no between group differences at baseline for any measures
- There were no differences between the acclimated group and control group for any variables (p>0.05), and no group X practice interaction (p>0.05)
- Fluid intake and sweat rate were less in the indoor practice and the first outdoor practice (p<0.001).
- Final Tgi was greatest in the first outdoor practice, and maximal Tgi was lowest for the indoor practice (p<0.001).

Conclusion

- To our knowledge, this is the first study to assess the effects of heat acclimation on collegiate women lacrosse players.
- There were no differences in heat strain and urinary hydration measures between the acclimated and control groups.
- However, it is possible the control group attained at least some acclimation through outdoor activities as the study was conducted in the late summer months in the Southeast US.
- The differences in HR and Tgi between practices were not surprising.
- The greater fluid intake and sweat rate during the last practice suggest that the athletes were able to match sweat losses with fluid intake.

There were no differences in heat strain and hydration measures between the acclimated and control groups.

Cryptococcal Meningitis Masquerading as Migraine

Orlando Health® | Bayfront Hospital

Emanuel Boyer, MD PGY1, Timothy Marsh, DO, Garrett Singleton, MD PGY2

Introduction

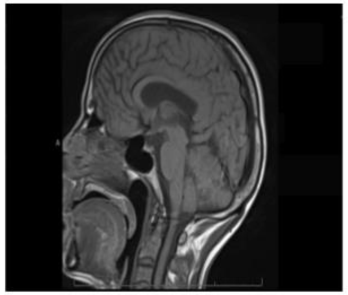
Cryptococcal Meningitis (CM) is a potentially life-threatening infection with disproportionate global impact on people living with HIV. As an AIDS defining illness, it is one of the leading causes of mortality among this population [1]. Acute mortality rates are dependent on the treatment setting, but there is a clear trend towards worse outcomes in resource limited countries. The foundation of treatment revolves around prompt diagnosis and early initiation of antifungal therapy, prevention through public health care is also critical.

Case Description

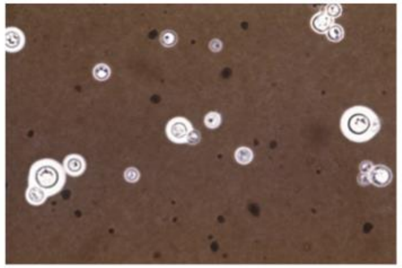
A male in his early 50's with history of untreated HIV presented with 10 days of ongoing headache. Initial labs and imaging were negative, he improved with symptomatic treatment and was going to be discharged home. Ultimately admitted for observation.

Neurology and Infectious disease were consulted, a MRI brain WWO contrast obtained and was negative. Day 2 of admission was observed having seizure activity. After stabilization, further workup with lumbar puncture was notable for elevated WBCs and opening pressure. CSF was positive for cryptococcal antigen.

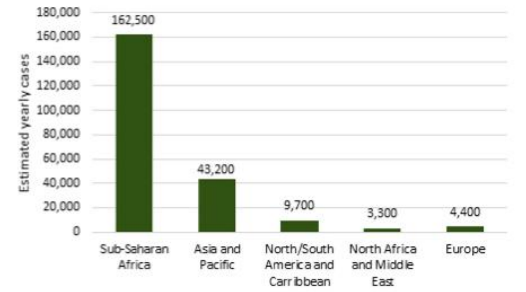
Induction phase treatment with amphotericin and flucytosine was started. Amphotericin nephrotoxicity was noted and regimen was changed to flucytosine with high dose fluconazole. Recurrent headache and AMS was treated with therapeutic lumbar puncture.



Sagittal T1 MRI Brain of patient



India Ink Stain: *Cryptococcus neoformans*



Discussion

-Amphotericin is a mainstay of treatment, however nephrotoxicity is a major concern

-Repeated therapeutic lumbar puncture is often required

-Delaying HAART can lower the chance of developing IRIS

-Successful antibiotic treatment consists of 3 phases: Induction, Consolidation, and Maintenance [2]

-Immunocompromised states increase the risk of CM

Conclusion

Family medicine physicians often care for people living with HIV at community health centers, urgent care clinics, and some emergency room settings. The classic presenting symptoms of meningitis may be absent in an immunosuppressed state, and as such, a high index of suspicion is required. Awareness of the insidious presentation, and pitfalls in management of CM, is necessary to avoid missing or mistreating a life-threatening infection.

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DARK
CALORIES

CATE SHANAHAN, MD

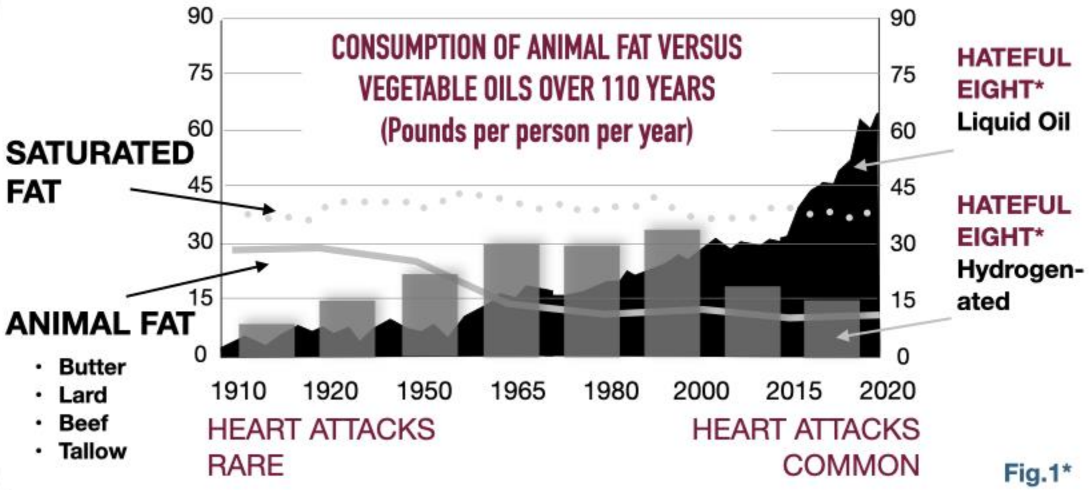


Fig.1*

As you can see, vegetable oil consumption has increased in the past 110 years, while saturated fat and animal fat have not.

There is no correlation between saturated fats and heart attacks. Nevertheless, we are taught that there is. Why is that?

ULTRAPROCESSED VEGETABLE SEED OILS: AN OVERLOOKED FACTOR DRIVING OBESITY, AND CHRONIC DISEASE?

THE PROBLEM

Eighty percent of our fat calories come from eight ultraprocessed vegetable seed oils such as soy, canola, and sunflower (the "Hateful Eight").

- Their high proportion of polyunsaturated fatty acids makes them dangerous.
- They can cause cellular oxidative stress.*
- They can deplete our body's antioxidants.*
- They oxidize into toxic aldehydes when heated.*
- A 5 oz serving of French fries cooked in seed oil contain the equivalent toxicity of a pack of cigarettes.*

Unfortunately, experts publish these warnings in technical journals that clinicians typically don't read, so their voices have not been heard.

- **Surprising sources of seed oil: Infant & Toddler Formula, Ensure, Mayo, Salad Dressings, Frozen "healthy" Dinners, Granola, Energy Bars, Tempura**
- **Eight Worst Offenders: French Fries, Fast Food Nuggets, Goldfish Crackers, Cheese Its, Triscuits, Tater Tots, & Doritos**

WHAT WE'RE OVERLOOKING

- **A historical link between the vegetable oil industry and the AHA has biased much of nutrition science, particularly about fat.***
- Polyunsaturated fatty acids oxidize more easily than cholesterol & saturated fat, confounding data analysis by making it look like the people who eat more PUFA are healthier when what's really going on is more complex.* Clinical trial authors lack the biochemistry training to understand this.*
- Similarly, clinical trial designers don't use markers of oxidative stress to assess the health effects of these oils.*
- In animal studies, high fat diets that are high in polyunsaturated fatty acids promote liver inflammation and T2DM. High fat diets that are high in saturated fatty acids do not.* Why would humans be different?

THE "HATEFUL EIGHT"

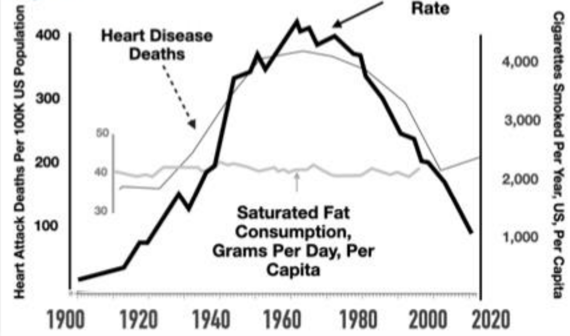
Also listed as "Vegetable Oil"

*** REFERENCES & MORE**

THE TAKEAWAY

As family physicians, we are uniquely positioned to help our patients with lifestyle change. Currently, we are misinformed and, tragically, our advice is counterproductive. **CONCLUSION: Medical education on fats needs to be updated.**

Fig. 2*



Resident Category

ORLANDO HEALTH® | Bayfront Hospital

Extended Tecovirimat for Relapsing Mpox in a Patient with HIV/AIDS

Mikaela Abell, DO, Shacara Wilson, MD, Charlotte George, MD, Kameron Peggs, MD
Family Medicine Residency Program

OBJECTIVE

To highlight a unique case of Mpox infection and need for treatment with an extended course of tecovirimat due to the presence of HIV/AIDS immunocompromise.

BACKGROUND

Mpox virus belongs to the orthopoxvirus genus and is an enveloped dsDNA viral zoonosis that is endemic in Central and Western Africa. An epidemic of Mpox involving multiple non-endemic countries was first identified in May of 2022 [10]. The illness typically includes a prodromal phase consisting of fever, malaise, and lymphadenopathy with an eruptive phase which is centrifugal in distribution and progresses through macules, papules and pustules [6]. More recent cases have involved proctitis with perianal lesions, particularly in those who have ano-receptive intercourse [2,3].

Figure 1: Facial lesions

Figure 2: Superimposed cellulitis on right elbow

Figure 3: Mpox lesions of oral cavity

Figure 4: Mpox lesions on left posterior leg

FIRST ADMISSION

In August of 2022, our patient, a 34-year-old transgender female with a history of chronic hepatitis C and a 9-year history of intermittently treated HIV/AIDS presented to an outside hospital with a 1-week history of new-onset skin lesions. ART with bictegravir-emtricitabine-tenofovir was initiated one week prior. There were ~10 open lesions to the face and scalp, 10 to the torso and back, and 15 to the genitals and rectum. Social history was significant for sex work, homelessness, and oral and intravenous substance use, specifically amphetamines. There was no history of international travel. Treatment was started with a course of oral tecovirimat, 600 mg BID for 2 weeks after MPox was confirmed around week 3 of hospitalization. Only moderate improvement in the lesions reported during this time.

SECOND ADMISSION

In October of 2022, 44- days after initial presentation, the patient presented to our institution with clinically worsening proctitis and lesions on the face, trunk, and genitals. Additional lesions now also on the oral mucosa, in the left eye, and on all four extremities. Despite some improvement with tecovirimat previously, the lesions never fully resolved and began to worsen since leaving the outside hospital. Empiric cefepime and linezolid started for suspected superimposed cellulitis. Eye lesions suspicious for Mpox keratoconjunctivitis of the left eye. Topical treatment regimen for the eye included a combination of antibiotics, steroids and an antiviral medications initiated. Consultation with an infectious disease specialist and in conjunction with the Florida Department of Health yielded a decision to begin a second course of oral tecovirimat for another 2-weeks. The first dose of tecovirimat was not given until day six of admission.

TEST RESULTS

CT AP:	Mild proctitis and gluteal fat stranding without abscess formation
CD-4 Count:	19 cell/microliter on admission --> 31 after one month of ART
HIV-RNA Viral Load:	33,635 copies/mL --> 9,000 with adherence of ART
Hepatitis C RNA	> 6 million IU/mL
Rectal Swab:	Negative for Neisseria gonorrhoeae, Chlamydia trachom atis and Herpes Simplex Virus 1 and 2
Orthopox PCR Swab	Confirmed MPox virus (West African clade) on day 6 of admission

DISCUSSION

As of October 2023, there have been 31,010 cases of Monkeypox in the United States and 55 deaths [1]. Available antivirals approved for treatment of MPox include tecovirimat, brincidofovir, and cidofovir [8]. It is suggested that tecovirimat may reduce the duration of viral shedding and illness [9]. The two clades of Mpox are the West African clade and the Congo Basin clade. Transmission in both clades is via large droplet exposure or contact with fomites such as clothes or bedding [7]. The West African clade has a milder course, while the Congo Basin clade has a more moderate to severe course with a higher mortality risk [7]. Mpox is typically self-limited with a mild course even in the presence of HIV/AIDS [5,3,9]. The gradient of influence that the presence of HIV/AIDS had on the effectiveness of the first course of tecovirimat cannot be determined at this time due to little research on treatment of MPox in severely immunocompromised patients.

BARRIERS TO TREATMENT

1- Delay in initiation of tecovirimat due to the turn-around time of the PCR swab results. Orthopox DNA PCR testing was not widely available during this time.

2- Delay in accessing tecovirimat from the National Stockpile.

3- Diagnosis was complicated by a superimposed skin and soft tissue infection. It is suspected that the natural course of progression of the skin lesions with ulceration may act as a portal of entry for bacterial infections, such as seen in this patient. Because of the limited knowledge concerning superimposed infections in Mpox and the effectiveness of tecovirimat in severely immunocompromised patients, it remained unclear for a time if the patient's persistent skin lesions were a result of secondary infection or relapsing Mpox due to an initially inadequate treatment course.

OUTCOME

Within 2 days of initiating the second course of tecovirimat, the patient reported improvement in the lesions' appearance associated with significant relief of pain; specifically of the oral mucosa lesions. Within the first week of therapy, she was able to ambulate, shower, and tolerate solid food. Upon discharge, health department housing arrangements were made for the patient to safely isolate for an additional 60 days as the duration of infectious viral shedding after lesions resolved was unclear at the time.

REFERENCES

MYASTHENIA GRAVIS IN PREGNANCY

Maleeha Ahmad, MD; Tierra Curry, MD; Clea Moore, MD; Kamini Geer, MD

Introduction

Myasthenia gravis is an autoimmune disorder, more prominent in women than men with a prevalence rate up to 200 cases per million. [1, 2] It usually presents in the second to third decade of life. [1] Patients present with progressive muscle weakness due to auto-antibodies against acetylcholine receptors at the neuromuscular junction. Diagnosis can be clinical, pharmacological, or serological. Acetylcholine receptor antibodies are present in up to 80% of patients, followed by less commonly MuSK antibodies, LRP4 antibodies, and seronegative [3]. MG is commonly associated with thymomas, autoimmune conditions like autoimmune thyroid disease (3-10%), and/or rheumatoid disorders like Sjogren's, rheumatoid arthritis, and SLE. It is recommended to obtain thyroid function tests in all patients with diagnosed MG, with the addition of testing for other autoimmune conditions based off clinical presentation. Most patients may benefit from a thymectomy.

Case

Patient is a 32-year-old G4P1021 with a past medical history significant for myasthenia gravis, diagnosed at age 1 with Tensilon test, chronic hypertension, OSA on CPAP, history of GDM A1, history of first trimester miscarriages x2, obesity, anemia, and mild persistent asthma with history of prior intubation x7. Patient initially presented at 8 weeks gestation in acute myasthenia gravis crisis requiring hospitalization. Prior to presentation, the patient was on Mestinon 60 mg Q6h and prednisone 10 mg daily for maintenance of MG. During her initial hospitalization she received IVIG x5 days. Patient presented for her initial OB visit at 11 weeks and 4 days. OB complications was also significant for father of baby with sickle cell disease. She continued her maintenance medications for MG with the addition of prenatal vitamins, regular IV iron infusions, and aspirin. Her multidisciplinary team included Neurology, Sleep Medicine, Maternal Fetal Medicine, Anesthesiology, and NICU. Per MFM, patient was recommended to deliver by 37 weeks with stress dose steroids at time of delivery. During her pregnancy she additionally presented to the ED for acute exacerbation of MG with varying presentations of shortness of breath and weakness twice. Patient also suffered a MVA in her 3rd trimester. NST surveillance was recommended after 32 weeks however due to barriers with transportation it was not obtained until 36 weeks. Patient successfully delivered a healthy male infant, with Apgars of 8 and 9, at 37 weeks and 4 days via scheduled repeat low-transverse C-section. Intraoperatively she was given Decadron. Neurology was consulted at time of delivery, who recommended additional IVIG x2 days. No complications in the acute postpartum period, however patient had difficulty with follow-up postpartum due to complications with her infant, transportation, and concern for postpartum depression. Zulresso was offered but patient was lost to follow up after her first post-partum visit and an initial evaluation with telemedicine psychiatry.

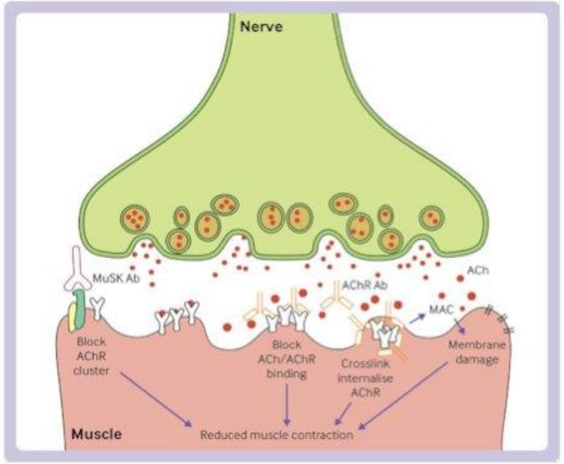


Figure 1. Illustration of antibody mediated pathogenesis in myasthenia gravis. Ab=antibody; ACh=acetylcholine; AChR=acetylcholine receptor; MAC=membrane attack complex; MuSK=muscle specific tyrosine kinase [9]

Discussion

Management of myasthenia gravis in pregnancy does not differ from routine prenatal care. Studies show no effect on fertility, spontaneous abortions, or premature birth. Acute exacerbations and/or crises may occur however varies in every individual with MG. A study which followed 47 women who had pre-existing MG prior to conception noted relapse in 17% of patients not on therapy prior to conception, improvement of MG symptoms in 39% on therapy, 42% with unchanged disease course, and 19% who deteriorated during pregnancy. Of note 28% of those pregnancies also had worsening MG symptoms post-delivery. [4] Most exacerbations occur within the 1st trimester with symptoms improving by second or 3rd trimester.

Choice of delivery was also found to be dependent on obstetrical provider. Most guidelines recommend spontaneous vaginal delivery over cesarean section. A retrospective study over 12-years identified 13 pregnant patients with myasthenia gravis. The results noted eleven out of thirteen delivered term after 37 weeks and two infants delivered prematurely. Of the thirteen deliveries, seven resulted in spontaneous vaginal delivery with one assisted forceps extraction, four elective cesarean sections, and two emergency C-sections. [5] In a systematic review which included 824 pregnancies, 56% of births were noted to be spontaneous vaginal delivery, 10% operative vaginal delivery, and 3% were cesarean delivery. [6]

Infants are at risk for transient neonatal myasthenia gravis, which occurs in 10-20% of cases. Presentation among infant can vary from respiratory distress, muscle weakness, poor sucking, or ptosis. These effects usually are evident within the 1st few days of life and can persist up to 3 weeks without complication. Symptoms resolve spontaneously however requires close monitoring. [7]

Zulresso

Zulresso, brexanolone, is a rapid acting FDA approved injection used for the treatment of moderate to severe postpartum depression in patients over the age of 15. It acts as a GABA-A receptor modulator and is delivered as a continuous IV infusion over a 60-hour period. A double blinded, randomized, placebo-controlled study enrolled 108 women with postpartum depression to receive either Zulresso (n = 54) or placebo (n = 54). It measured Hamilton Depression Rating Scale (HAM-D) scores which showed a significant reduction of HAM-D scores at 60 hours compared with placebo. The most common side effects noted during this study included headaches, dizziness, dry mouth, flushing, and somnolence. [8] the drug is reported to be safe with breast-feeding however some recommendations include stopping breastfeeding temporarily will receiving the infusion and resuming breast feeding 4 days after completion of the treatment. [a] Eligibility to receive the injection involves an application process and administration in a healthcare facility with direct supervision by a physician.

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Are Primary Care Patients Using AI to Learn About Their Health Conditions?

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Florida State University College of Medicine[1]

Introduction

AI's utility in the medical world is under contention, with current predictions showing that AI can be used to not only make clinical diagnoses but also patient care plans.

With such open public access, it begs the question as to what extent the general population is using AI to inform themselves about their medical conditions and treatment plans.

This study attempts to derive the following information:

- Are primary care patients using AI to learn about their health conditions?
- Do patients trust the information being provided by AI?
- Does the information from AI corroborate the information from primary care providers?
- Are there any demographic and/or socioeconomic trends in patients that utilize AI in their health education?

This information can help physicians and public health administrators achieve better patient outcomes and can help predict future trends for AI and patient education in medicine.

Methods

This cross-sectional study surveys patients in multiple primary care clinics in multiple different counties across the state of Florida about whether they utilize AI platforms such as Chatbot, ChatGPT, and Bard to educate themselves on their medical conditions. The surveys contain 5 demographic and 5 AI questions and were administered by FSU COM medical students on their third-year family medicine rotation via paper and electronic formats. All participants voluntarily opted into the study knowing that the results would have no impact on their care.

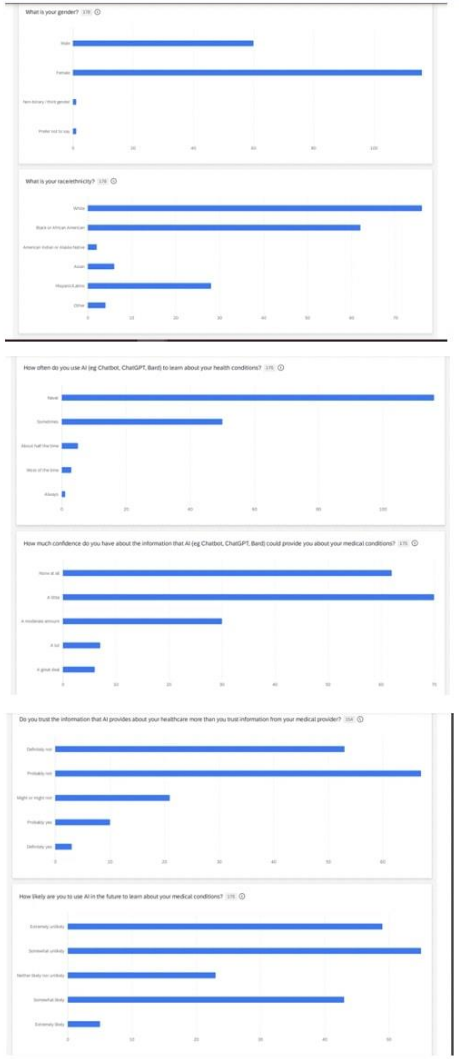

Table: Bar graphs showing questions and distributions.

Results

200 responses have been recorded thus far in the study and a preliminary analysis was performed.

- 45% of responses were 18-45 y/o, 25% were 46-65 y/o, 10% were 66-75 y/o, and the remaining were over 75 y/o.
- Of these, 60% were female and 65% had received at least some level of college education.
- More than 60% of people stated they never use AI to learn about their health conditions and only 5% use it more than half the time.
- Most participants have low confidence levels in the accuracy of medical information provided to them via AI and do not trust that information more than their primary care provider.
- 50% of participants voiced they are unlikely to use AI in the future to learn about their medical conditions while 25% were indifferent and the remaining 25% were likely to.

Discussion

Patient views on AI for self-education have not been well studied. Our preliminary results corroborate the sentiment of other AI polls on various topics in that most patients are not using AI to learn about their health conditions and do not trust it over their physician's judgment. A critical finding thus far is that at least 25% of patients are likely to use AI to learn about their health care in the future. This is particularly important in a time of mass miseducation, misconceptions, and distrust among medical professionals.

Conclusion

Healthcare providers must learn to understand and utilize the use of AI in patient education as it is projected to drastically increase in the future. If healthcare providers can understand where patients are receiving their medical education, they can better navigate patient care and battle medical miseducation. These projections can help medical providers and organizations stay up to date and pre-emptively adapt to the needs of their patients and population.

AdventHealth

Endometriosis or Metastatic Cancer- A Suspicious Case

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Residency

Introduction

- Endometriosis is a chronic gynecological disorder characterized by the pathologic finding of endometrial-like tissue outside the uterus.
- Patients classically present with excessive menstrual cramps, heavy menses, pain during intercourse and infertility.
- It is estimated that 2-10% of American women between the ages of 25 to 40 and 190 million women worldwide are affected by endometriosis.
- Further, 5-12% of women with endometriosis have bowel involvement.
- Although endometriosis is common, it is rarely considered in the differential diagnosis of acute abdominal pain [1, 2, 3, 4].

Purpose

- To illustrate the complexities of diagnosing endometriosis in the setting of alarming radiologic findings and an acute clinical picture.

Patient Presentation

- The patient was a 32-year-old female with no pertinent past medical history, who presented with severe, central abdominal pain radiating to her right side as well as bloating, cold sweats, nausea, vomiting, not passing gas or having bowel movements and poor oral intake for three days.
- She had been having postcoital bleeding with dyspareunia for the past two years.
- Her last pap smear was done at age 21 with unremarkable results per patient report.
- The patient denied family history of breast cancer, ovarian cancer or cervical cancer.
- She reported vaping marajuana, drinking alcohol and using cocaine on occasion.

Initial Work-Up

- On presentation, the patient's vital signs were stable. Physical exam was notable for centralized abdominal tenderness. Labs notable for a moderate neutrophilic leukocytosis and negative pregnancy test.
- A CT of the abdomen/pelvis was performed reading as a constellation of findings most compatible with primary cervical carcinoma (primary mass measuring 8 x 8.4 x 6.4 cm), liver metastatic disease, peritoneal carcinomatosis, a mass of the left adnexa and several enlarged lymph nodes. CA 125 was 3428.

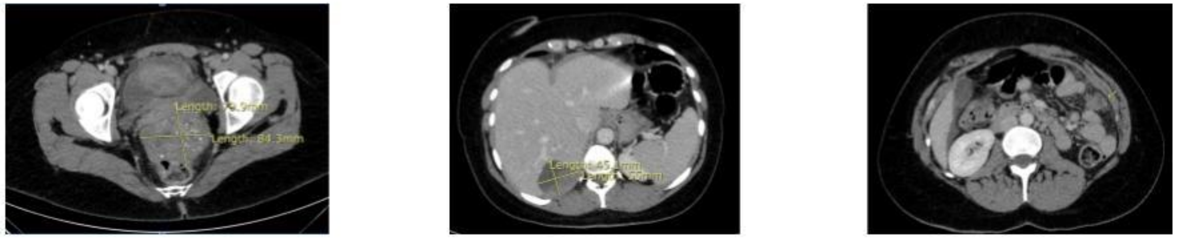

Figure 1. CT showing rectovaginal mass, liver mass and suspected peritoneal carcinomatosis (left to right)

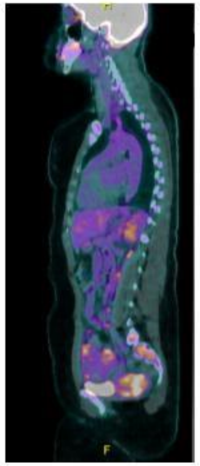

Figure 2. PET scan showing several hypermetabolic areas

Clinical Course

- Once admitted, an ultrasound of the pelvis/ovaries with dopper was performed showing a large cervical and adnexal mass suggestive of neoplastic disease.
- Patient then had a cervical biopsy with normal findings and no evidence of squamous intraepithelial lesions or malignancy.
- A PET scan was then done showing hypermetabolic areas/masses in the cervix, pelvis, lymph nodes, peritoneal area and right hepatic lobe.
- Biopsies of the endometrium and rectovaginal mass were then performed showing disorganized proliferative endometrium and benign squamous epithelium without signs of malignancy.
- Patient then underwent port placement to prepare for treatment of presumed metastatic cervical cancer.
- A GI mucosal biopsy and FNA of the rectal mass were then performed showing mullerian stroma and glands with no evidence of dysplasia or malignancy.
- The patient eventually underwent a total abdominal hysterectomy with bilateral salpingo-oophorectomy. Pathology report showed extensive endometriosis, adenomyosis, adhesions and ovarian cysts. The patient was then discharged for outpatient port removal and follow-up.

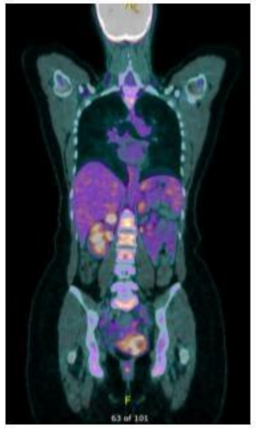

Figure 3. Figure 3. PET scan showing several hypermetabolic areas including rectovaginal mass with SUV as high as 10

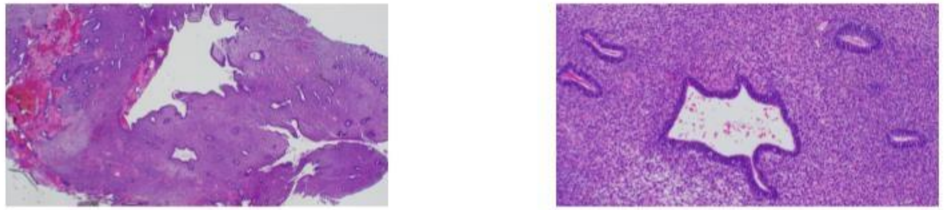

Figure 4. Benign appearing glands and endometrial type stroma on 20x and 100x from hysterectomy (left to right)

Discussion

- This case underscores the potential for endometriosis to mimic advanced gynecologic malignancies, both clinically and radiologically.
- There have been several case reports citing similar instances where deep infiltrating endometriosis has been thought to be cancer.
- A similar case describes a woman with abdominal pain, intermenstrual bleeding and hydronephrosis with concern for cervical cancer based on CT and transvaginal ultrasound. This patient was ultimately taken for a total abdominal hysterectomy and bilateral salpingo-oophorectomy which showed endometriosis with no signs of malignancy [4].
- Another similar case describes endometriosis mimicking colon cancer. In this case, a CT scan for a bowel obstruction showed sigmoid mural thickening suspicious for malignancy.
- There are several other case reports on bowel endometriosis causing obstruction as well as a case report on endometriosis mimicking retroperitoneal liposarcoma [5, 6].
- These cases highlight the importance of considering a broad differential diagnosis for pelvic masses.

Conclusion

- This case highlights the lack of education around endometriosis and the broad range of clinical presentations. Almost 60% of women will see at least three clinicians before a diagnosis of endometriosis is made after an average of seven years with symptoms.
- There is limited literature in this field as well as challenges with diagnosing based on imaging [1].
- A shift toward clinical and image-based diagnosis likely will shorten the time to diagnose endometriosis but radiologists likely will need further training in this area before this can be relied upon [7].
- It can be concluded that more research is needed on the topic of endometriosis to better diagnose and treat affected women and prevent adverse outcomes.

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Vatsal Patel, MD- Central Florida Pathology Associates at AdventHealth

Charcot foot in a patient with type 2 diabetes with neuropathy: A missed diagnosis

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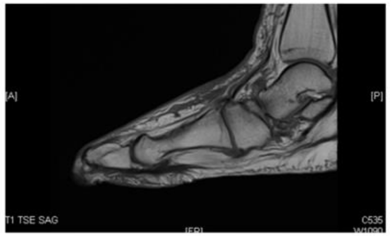
Background

- Charcot neuropathic osteoarthropathy, also referred to as Charcot foot, is a rare but debilitating complication of diabetes. There are multiple theories to describe the pathophysiology behind the development of Charcot foot. However, in short, this disorder occurs due to repetitive micro-traumas in the setting of loss of sensation and neurovascular changes caused by pathological innervation of the blood vessels. Patients with Charcot foot will present with a hot, swollen foot with some destruction of bone and joint structure. This is a rare disorder in which the presenting symptoms often mimic other common pathologies, such as cellulitis, venous thrombosis, inflammatory arthritis, or ankle sprain/fracture. Due to it's similarities to other ailments, there is often delayed diagnosis and treatment that contributes to increased morbidities, such as severe deformity, impaired mobility and amputation. The purpose of this case presentation is to highlight the importance of early identification of Charcot foot by family medicine physicians in order to prevent poor patient outcomes.

CASE PRESENTATION

- 54-year-old female with a past medical history of type 2 diabetes, diabetic neuropathy, and coronary artery disease presented to the emergency department (ED) with a complaint of left foot swelling and redness with blisters for one week.
- **Vitals:** T– 99.2; P– 117; RR– 21; BP– 129/73
- **Labs:**
  - **CBC:** 8.7//14.5/43.3//247
  - **CMP:** 139/4.5//105/26//13/1.06//100
  - **D-Dimer:** 1922
- **Imaging:** XR—diffuse soft tissue swelling consistent with cellulitis and no evidence for abscess or osteomyelitis
- **Decision:** admission for sepsis secondary to cellulitis
- **Plan:**
  - **Treatment:** IV antibiotics with transition to oral cefazolin
  - **Additional Imaging:**
    - **Doppler ultrasound:** negative for DVT
    - **MRI:** Negative for osteomyelitis (no comment on the bones or joints of the foot)
  - **Consults:** Infectious disease
  - **Length of stay:** 2 days



OUTCOME

- **One week follow up:**
  - Symptoms appeared to be improving, outpatient antibiotics continued to complete course
- **One week later:**
  - Symptoms began to worsen, patient represented to the ED
  - Vitals and labs were normal; repeat x-ray of the foot showed no changes when compared to the initial x-ray
  - Discharged home
- **Two days later:**
  - Followed up with her PCP and there was concern for a methicillin-resistant Staphylococcus aureus infection, thus, her antibiotic was switched from cephalexin to doxycycline
- **One week later:**
  - Left foot remained swollen and erythematous
  - After the failed trials of antibiotics and absence of systemic signs and symptoms of infection including leukocytosis or fevers, an infection was deemed less likely.
  - Repeat MRI ordered with a specific indication of Charcot foot
    - **Impression:** abnormal appearance of the midfoot with deformity of multiple tarsal bones, most compatible with developing Charcot joint.
  - Referral placed to Podiatry with prescription for walking boot for immobilization
- **Final outcome:**
  - Surgery not an option
  - Crow boot prescribed
  - Goal: Avoid amputation

Conclusion

This case illustrates the challenges that present in diagnosing Charcot neuropathic osteoarthropathy and how diagnosis can be missed or delayed. It is common that patients with Charcot foot experience prolonged delays from symptom onset to correct diagnosis. A delay or miss in diagnosis results in delayed treatment and inappropriate use of antibiotics, leading to poor patient outcomes. Patients with type 2 diabetes with neuropathy are cared for by family medicine physicians. Therefore, it is important for family medicine physicians to have an understanding of the different disorders that Charcot foot can imitate in order to decrease the time to diagnosis and treatment so that patient outcomes are improved.

Learning points for the family medicine physician:

- In patients with diabetic neuropathy, keep a high level of suspicion for Charcot foot in those who present with concerns for lower extremity cellulitis, venous thrombosis, or other concerns in the foot or midfoot .
- In patients with suspected Charcot foot, obtain an MRI with documentation of the clinical suspicion
  - If able, always personally review any imaging order that is placed.
- Once diagnosis of Charcot foot is made, discuss immediate off loading with the patient and place an urgent referral to orthopedics or podiatry.

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The “Long Term High” of Nitrous Oxide: Vitamin B12 Deficiency Secondary to Chronic Heavy Nitrous Oxide Use

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Tallahassee Memorial Healthcare Family Medicine Residency Program

Introduction

Vitamin B12 is a water soluble vitamin and is obtained from dietary sources.

Vitamin B12 deficiency typically manifests as a macrocytic anemia but can also manifest with neurologic and psychiatric symptoms such as sensory deficits, ataxia or mood disturbances. The progression is insidious which can lead to late diagnosis. Vitamin B12 deficiency is usually due to nutritional deficits, but it can also be drug related.

This case demonstrates how chronic nitrous oxide(NO) use can lead to Vitamin B12 deficiency and the neuropsychiatric sequelae.

Case Description

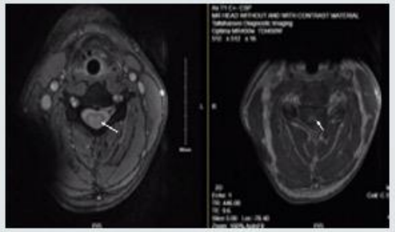
A 35 year old male brought into the ER by the police unable to walk. He has been experiencing bilateral lower extremity weakness for the **past 6 weeks.**

Patient has a history of seizure disorder and a remote history of Ulcerative colitis but has not been on treatment for many years and is asymptomatic. He does have **a history of chronic heavy nitrous oxide use.**

On presentation, patient’s bilateral lower extremities had 3/5 strength at hip/knee extension, **0/5 otherwise. He did have absent reflexes at the knee and ankle and decreased sensation throughout the lower extremities bilaterally. Spasticity and severe proprioception impairment also observed.** Patient’s **paranoia** became apparent over the first several days of his 2 week hospital admission.

Results

Lab	Results
Hb	13.4 (13.5-18)
MCV	101 (78-100)
Vitamin B12	156 (180-914)
Copper	121 (69-132)
NMO, Anti-NMO, HIV, RPR	Negative



Imaged above is patient’s MRI Spine
Results: long segment of T2 hyperintensity localized to the dorsal column bilaterally with patchy enhancement extending from C1 to T4 levels. (as noted with arrows)

Discussion

NO, while known as an anesthetic agent it is also a common substance for recreational use for its euphoric effects.

NO irreversibly oxidizes the active form of Vitamin B12 into an inactive form which impairs nerve myelin sheath integrity leading to myelopathy and peripheral neuropathy. This patient had classic signs and symptoms of subacute combined degeneration along with noted paranoia during his admission.
With Vitamin B12 supplementation, while his psychosis resolved in a few days, after 8 weeks in rehab he was only able to ambulate 300 feet with a rolling walker and still had issues with his balance.

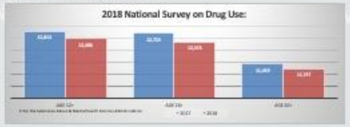
Routine lab testing measures both active and inactive forms of Vitamin B12 which may lead to delay in replacement of Vitamin B12 if levels are within normal limits. Testing for Methylmalonic Acid and Homocysteine provides better indication of functional Vitamin B12 levels.

Vitamin B12 deficiency is usually due to inadequate dietary intake or impaired gastric/intestinal absorption. It can also be associated with drugs such as as Proton Pump Inhibitors, Metformin and NO use. Copper Deficiency is also associated with Vitamin B12 Deficiency.

Conclusion

As physicians we are familiar with Vitamin B12 deficiency hematologic manifestation, but the neurologic presentation is less obvious. Early Vitamin B12 replacement is imperative as the neurologic side effects may be slowly and/or incompletely reversed.

NO use is more prevalent in the 2nd to 3rd decade of life and as Family Medicine Physicians we don’t routinely screen for Vitamin B12 Deficiency in this population. This should prompt Vitamin B12 screening when this population presents with neurologic and psychiatric symptoms.



We also need to advocate for more sensitive testing with Methylmalonic Acid and Homocysteine so we can have a more accurate indication of functional Vitamin B12 Level.

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HALIFAX HEALTH

Social Determinants of Health Training Can Improve Screening Rates in a Family Health Center

Zachary Cetraro, Miranda Ricart, Agueda Taylor, Jacob Wilson, Ann Jacobson, Alexander Macia, Connor Hermida, Maria Witherspoon,
Michael Young, Laura Lamb, Kathryn Fraser, Sachoya McDonald

BACKGROUND

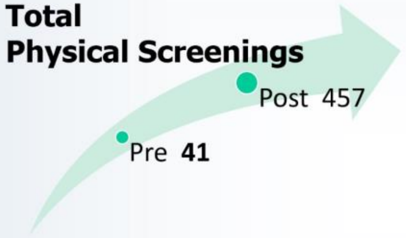
- SDOH such as socioeconomic status, healthcare access, and living conditions, influence up to 80% of health outcomes, constituting approximately 80% per National Academy of Medicine.
- JCAHO and ACGME requires that an "organization assesses the patient's health-related social needs and provides information about community resources and support services".
- Our QI project addressed a deficiency in screening, documenting, and addressing SDOH in our clinic with the goal of improving patient access to resources addressing social needs.

METHODS

- A pamphlet of local resources was created, and an annual screening process was implemented using the AAFP's The Everyone Project's SDOH form.
- Residents received a lecture on screening protocols, ICD-10 codes, and addressing SDOH needs with the AAFP neighborhood navigator.
- For two weeks, all clinic patients were screened for SDOH needs.
- Positive and negative cases were tracked using billing codes. Reports were analyzed three months pre- and post-intervention.

RESULTS

- Pre intervention, 41 physical copies of the SDOH questionnaires were completed
- Following intervention, 457 physical copies were completed.
- There was tenfold increase of screenings performed
- Of the 457, only 98 were entered into the EHR system
- There was a threefold increase of SDOH screenings logged into the EHR post intervention.

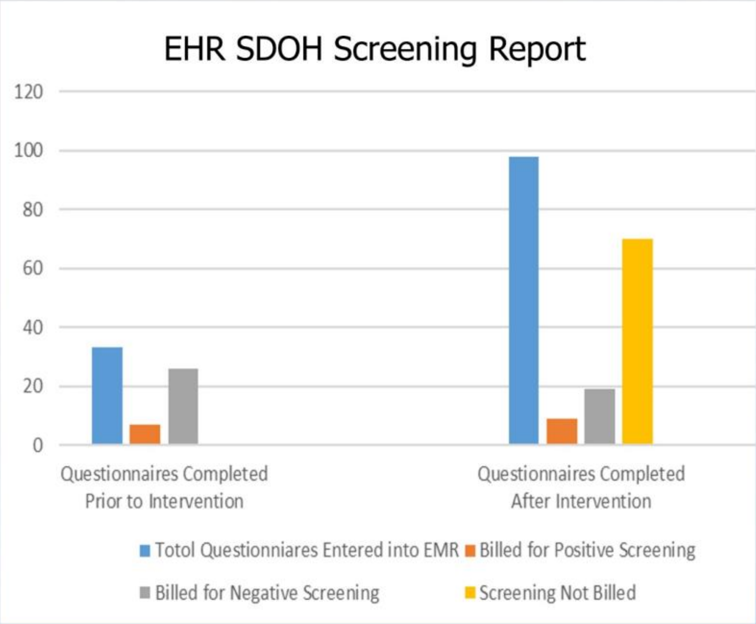

Total Physical Screenings

Post 457

Pre **41**

The EveryONE Project™
Advancing health equity in every community

neighborhood navigator



DISCUSSION

- Teaching residents about the importance of social factors and available tools can increase screenings for SDOH
- There continues to be a gap in screenings performed and accurate documentation and billing of SDOH
- As residents become more aware of SDOH in their patient population, they can better help their patients access resources
- One limitation of our study was there were technical limitations in capturing all completed screenings in our EHR.
- We recognize that the incomplete data may not be representative of actual screenings performed and its impact in our clinic.

FUTURE DIRECTIONS

- The findings of this research project emphasize the importance of further development in the family medicine setting to enhance screenings and improve knowledge of SDOH.
- Further research of similar implementation with sustained positive outcomes will promote a more comprehensive healthcare model adhering to the ideals of medical governing bodies.
- We will continue to implement such training yearly in our residency, and encourage other family medicine clinics to do the same.

A Rare Case of Pediatric SLE after SARS-CoV-2 Vaccination

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Advent Health Sebring Family Medicine Residency

1 Introduction

Autoimmunity after vaccination may develop through the mechanism of molecular mimicry where foreign antigens share a similar structure or sequence with self-antigen[3]. The SARS-CoV-2 mRNA vaccination shares specific peptides between human proteins and the COVID-19 spike protein which can cause an autoimmune response triggering rheumatologic manifestations such as Systemic Lupus Erythematosus (SLE)[1]. SLE is a systemic autoimmune condition presenting with symptoms of arthralgia, cutaneous disease, serositis, renal disease, and pulmonary disease[2]. Furthermore, SLE is less commonly seen in children.

This case features an eight-year-old female child with symptoms of suspected Seronegative SLE (rash, chest pain, weakness, severe joint pain of shoulder, hips and ankles) ten days following her Pfizer-BioNTech COVID-19 vaccination series. Per our literature review, this is the second case of a rare pediatric mRNA vaccine-induced SLE.

2 Case Description

An 8-year-old female patient was referred from Pediatric Genetics to Rheumatology for further evaluation of a complex immunological picture ten days posterior the second dose of Pfizer-BioNTech SARS-CoV-2 mRNA in December 2021. Starting with a purplish rash, weakness, fatigue and moderate chest pain, her condition evolved into severe joint pain affecting her shoulders, hips, and ankles, severely limiting her mobility and impacting her daily life.

PMH: Attention-Deficit/Hyperactivity Disorder (ADHD) and Asthma
PSH: none
Allergies: Cheese, egg, maple flavor, milk, shrimp, wheat
Medications: none, FH: none, SH: none
ROS: +chest pain, +weakness, +fatigue, +arthralgia, +dyspnea, +morning stiffness, +xerophthalmia, +xerostomia, +nausea, +somnolence
Vital Signs: Ht: 4ft 3 in, Wt: 58 lbs, BMI: 15.68
Physical Exam:

Skin	Eyes	Respiratory	Connective tissue	Neurological	MSK
Normal	Normal	Normal inspection, normal effort	Soft tissue discomfort in right groin, left groin, bilateral hips, bilateral anterior thighs	Level of consciousness, cognition and memory normal	Tenderness in left shoulder, bilateral hips, bilateral knees, and bilateral ankles. CDAI score: 13.0

3 Clinical Course

Extensive immunological assessments highlighted high titers 1:320 of Antinuclear Antibodies with speckled pattern and decreased hemoglobin. The rest of the immunological panel was negative. Despite investigations ruling out specific diagnoses, the persistence of symptoms led to an array of multidisciplinary evaluations across specialties. The progression included anemia, paresthesia, recurrent UTIs, transient hematuria, and cardiac and pulmonary work up for chest pain.

The patient met more than the minimum of four American College of Rheumatology classification criteria for the diagnosis of SLE: malar rash, arthritis, serositis, renal disorder, hematological disorder, immunological disorder, and antinuclear antibody[11].

Strategic intervention for Seronegative SLE with Hydroxychloroquine and Prednisone showed promising improvements yet the persistence of flares led to the introduction of immunomodulator infusions with

enabling independent movement without assistance.

4 Evolution of symptoms & targeted intervention

5 Discussion

SLE and the COVID-19 vaccine augment similar mechanisms of autoimmunity through type I interferon and proinflammatory cytokine pathways via the mechanism of molecular mimicry where foreign antigens share a similar structure or sequence with self-antigens[3]. SARS-CoV-2 mRNA vaccination shares specific peptides between human proteins and the COVID-19 spike protein which can cause an autoimmune response triggering rheumatologic manifestations such as Systemic Lupus Erythematosus (SLE)[4]. Due to the transient nature of SLE, negative serologic tests are not exclusionary of SLE, and serial testing at periodic intervals is necessary[6]. Anti-double-stranded DNA antibodies (dsDNA) exist transiently in only 50-60% of people with SLE[9] and are not associated with cutaneous or discoid lupus[10].

The first ever reported SLE case following the COVID-19 vaccination was in a 68-year-old Caucasian woman 7 days after Pfizer-BioNTech COVID-19 vaccination, with symptoms beginning 2 days post-vaccination[1]. This patient was found to have a positive ANA, positive dsDNA, and responded to steroids.

The clinical presentation of autoimmunity in the pediatric population is more rigorous than in adults. The first case of pediatric COVID-19 vaccine-induced SLE occurred in a previously healthy 14-year-old male. Two days following the child's third dose of the Pfizer-BioNTech COVID-19 vaccine, he presented with maculopapular malar rash, photophobia, pleuritic chest pain, arthritis, and membranous lupus nephritis[7]. Three weeks after vaccination, laboratory work revealed positive markers for SLE. Symptoms improved after treatment with hydroxychloroquine, prednisone, and mycophenolate mofetil[8].

6 Conclusion

This rare and unusual case highlights the variable nature of immunological responses in children post-vaccination, prompting the need for ongoing research and innovative therapeutic approaches for management of rheumatological manifestations in pediatric patients.

7 References

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Improving Prenatal Care at Family Medicine Residency Clinic with utilization of a Decision-Support Tool

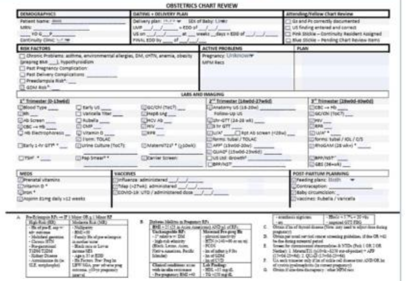
Bianca Channer MD, Kamini Geer MD, MPH, Ann Klega MD, Clea Moore MD, Tierra Curry MD

Introduction

Prenatal care is complex, with numerous evidence-based quality metrics to follow. Many providers, especially Family Medicine residents, struggle to meet these goals while navigating intricate, patient-specific recommendations. This complexity undermines resident confidence in caring for prenatal patients.

Research demonstrates the value of evidence-based medicine and decision-making tools in enhancing quality of care and patient safety. Therefore, this quality improvement project implemented a decision-support tool specifically designed to boost residents' confidence and comfort in prenatal care.

Decision Making Tool



OBSTETRICS CHART REVIEW

DEMOGRAPHICS

DATING + DELIVERY PLAN

RISK FACTORS

ACTIVE PROBLEMS

PLAN

LABS AND IMAGING

MEDS

VACCINES

POST-PARTUM PLANNING

Contribution made by Divya Krishnan MD

Objective

This quality improvement project aims to increase Family Medicine residents' confidence in ordering risk-factor appropriate labs, pre-charting, and precepting pregnant patients. Ultimately, our goal is to improve the overall care we provide to pregnant patients.

Methods

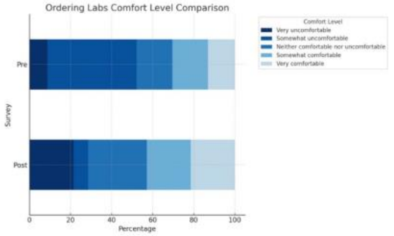
This QI project focused on care at two the locations: The Family Medicine Clinic at AdventHealth Winter Park and the Community Medicine Clinic at AdventHealth South.

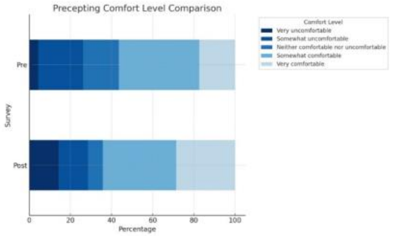
The Intervention involved providing residents with a paper-based decision support tool to guide appropriate lab orders and pre-charting for pregnant patients. The tool outlined patient risk factors, standard labs, disease-specific labs, and ACOG recommendations.

Outcomes were measured by resident surveys. The initial survey assessed 35 residents' comfort levels with pre-charting, precepting, ordering risk-factor labs, and caring for pregnant patients. The Decision-support tool was then distributed among residents for use when precepting pregnant patients. After six months, the same survey was administered to measure changes in comfort levels. Pre- and post- intervention survey results were compared to evaluate effectiveness

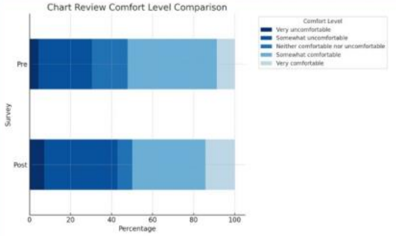
Results

- Residents showed improvement in Lab Ordering and Precepting but not pre-charting.
- Residents use of a systemic approach to chart review improved from 51% to 72% after implementation.





Results



Conclusions

Our project investigated a clinical decision-making tool for pregnant patients. Residents reported greater comfort ordering labs and increased confidence in risk stratification, suggesting improved patient care. However, the paper-based tool faced limitations in usability and implementation. It did not improve pre-charting. Future iterations should be digital to improve utilization and track quality metrics to definitively assess the impact on care.

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AdventHealth
Graduate Medical Education

The Whippit Effect: A Case of Nitrous Oxide Poisoning Precipitating Subacute Combined Degeneration

Ricardo Chujutalli MD, MBA, MA, Julio Pasos DO, Kimberly Heber PA-S, Daniel Jess Tambunan MD

AdventHealth
Graduate Medical Education

Abstract

Young 24-year-old female adult who presented with ascending numbness, bilateral tingling, ataxic gait, and recurrent falls. She admitted to using recreational whippit, which is an inhalant containing nitrous oxide. This drug has seen prevalence among teenagers and young adults. Through the consummation of the whippit, people have experienced dizziness, euphoria, and pain relief. As a result of her chronic and excessive intake, she required hospitalization. The MRI exam showed subacute combined degeneration in the cervical and thoracic region, treatment with high doses of vitamin B12 and gabapentin for paresthesia relief were necessary. Furthermore, physical and occupational therapy for gait rehabilitation were encouraged and performed as part of the process to help the patient improve.

Pertinent Presentation

- Social and medical history:
  - Excessive nitrous oxide consumption for recreational purposes
  - Obese with no acute distress
  - Vital signs within normal range
  - No significant findings in cardiopulmonary and abdominal examinations

- Neurological examination:
  - Positive Babinski reflex on left foot, negative on right
  - Numbness and tingling in lower extremities
  - Ataxic gait and paresthesia in bilateral hands
  - Bilateral clonus 3+, intact cranial nerve functions

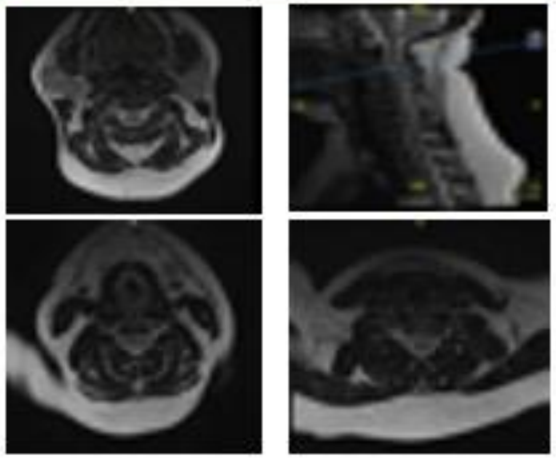
- Laboratory findings:
  - Elevated folate and MMA/Creatinine ratio
  - Normal vitamin B12, ceruloplasmin, copper, and TSH
  - Abnormal CBC with low hemoglobin, elevated RDW and MCV

- Imaging:
  - Normal brain MRI
  - Subacute combined degeneration in cervical and thoracic spine MRI
  - Unremarkable lumbar spine MRI

Discussion

Our 24 year-old female presented with symmetric ascending numbness, bilateral tingling, ataxic gait and normal serum vitamin B12 level. Due to her intake in nitrous oxide, she developed progressive debilitating symptoms. Our team ruled out potential etiologies that included infection, excess mineral, hormonal changes. In this course, the MRI showed possible changes in the posterior cord region of the cervical and thoracic regions, causing dorsal spinal column dysfunction and lateral corticospinal tract myelopathy such as hyperreflexia. As a result, a diagnosis of subacute combined degeneration was consistent with the clinical presentation. Our findings suggested that the nitrous oxide inhibited the vitamin B12 pathway, interrupting the methylation process of myelin proteins, ultimately causing neurological deficits, including peripheral neuropathy with myelopathy. In light of this understanding, a removal of nitrous oxide exposure was indicated, vitamin B12 supplementation was given, and close monitoring of her improvement was recorded.

Imaging



- Abnormal increased T2 signal intensity in the dorsal columns of the cervical cord
- Begins at the C2 level and extends to the C6-7 level
- Inverted V appearance on T2 axial images
- Findings consistent with subacute combined degeneration
- No abnormal enhancement observed

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Follow up

Inpatient rehab:
- Patient transferred to inpatient rehab facility for 10 days
- Continued 1 mg vitamin B12 IM daily for two weeks, then weekly for four weeks, and monthly until full recovery
- Gabapentin 600 mg TID prescribed for paresthesias
- Improved gait noted on discharge

Home health services:
- Patient provided with home health services on discharge

Follow-up:
- Outpatient neurology follow-up recommended

Financial disclosure:

No financial incentives to disclose at this time

Increasing a new outpatient clinic panel of patients through outreach and advertising

Jessica Domitrovic, MD[1], Paola Perez, MD[1], Suzanne Perkins, MPH[2], Nicholas D'Angelo, MD[1]

[1]HCA Florida Orange Park Hospital, Orange Park, FL
[2]HCA Healthcare, Nashville, TN

HCA Florida
Orange Park Hospital

Background

In the fall of 2022, the HCA Florida Orange Park Family Medicine Residency continuity clinic changed in affiliation from Palms Clinic to HCA Healthcare Outpatient Services, necessitating the development of a new patient panel. By mid-winter, patient numbers had not increased to the target volume. This project was undertaken to increase our panel.

A literature review demonstrated many ways to market your practice (Anwar, 2001). Effective community outreach and live education are seen as key components of an effective healthcare practice marketing strategy and can lead to trust and new patients. Becoming an educational resource and a caring presence in the community are effective ways of reaching out to prospective patients (Gareis, 2014), as is targeting the patient populations you hope to come to your clinic, such as pediatric patients (Anwar, 2001; Giovino, 2002; Reddy, 2019). Therefore, the intent of our project is to improve local knowledge of our clinic to increase our patient volume towards that panel size.

Objective

Our goal patient panel size is 40 pts/day or 800 pts/month pts/day or 800 pts/month. We plan to increase patient volume towards this goal through outreach, education, and advertising.

Methods

After a literature review, it was decided to attempt to increase patient volume through outreach, education, and advertising. This project was approved as a QI project.

A brief 3 question patient survey was created.

- This focused on current patients' perceptions of important primary care clinic attributes and their reasons for coming to this clinic.
- The survey was administered to patients as they checked in to the clinic over a two month period.

Dept. of Family Medicine members attended local outreach, clinical, & educational community events in order to:

- meet potential patients face-to-face
- distribute clinic information
- provide free services such as BP checks and sports physical exams

Local media projects were initiated to increase exposure of the clinic:

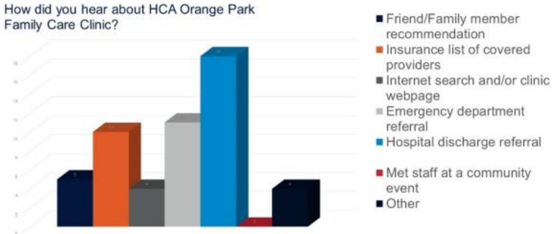
- social media posts
- hospital billboard ads
- ED / OB ED fliers
- website updates

The volume of clinic patient encounters was tracked throughout this time.

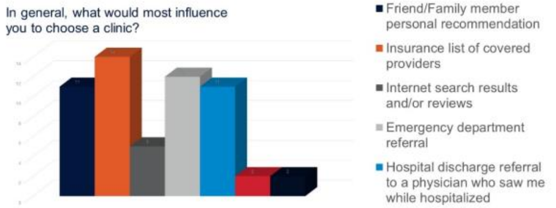
Results

Questionnaire Responses

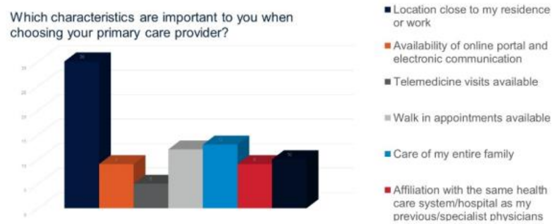
How did you hear about HCA Orange Park Family Care Clinic?



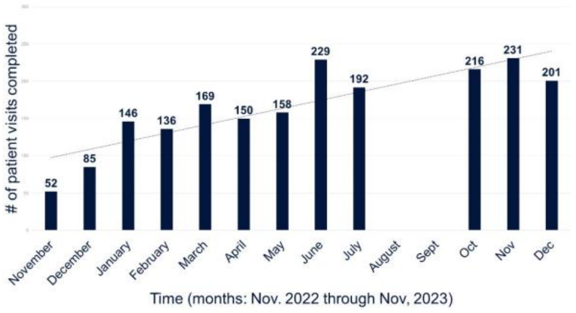
In general, what would most influence you to choose a clinic?



Which characteristics are important to you when choosing your primary care provider?



Increase in clinic patient volume



Discussion

- During 2 months during the spring of 2023, 46 patient surveys were completed at check in.
- Subsequently, the surveys were reviewed and data summarized. Results of the clinic survey show:
  - The most common stated reason for coming to this clinic was a hospital discharge referral from our Inpatient Service or the Emergency Department.
  - Their insurance list of covered providers was the top reason for choosing a clinic
  - The most important characteristic when choosing a PCP was a location close to residence or work

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- From spring through summer of 2023, 11 community outreach events were completed by members of the Family Medicine Department.
- In coordination with HCA Healthcare regional and local marketing staff, advertising material was updated and distributed.

- Patient volume data was pulled from previously compiled resident patient count data.
  - Volume increased steadily during our study period from early 2023, prior to the interventions, through the next 5 months, increasing 68% from 136 patients per month initially to 229 five months later.

Conclusion

- The majority of our new patients are hospital discharge referrals, demonstrating the importance of partnerships with healthcare systems. Therefore, we focused further recruitment efforts in this area, while also continuing to do community outreach events. We added the clinic to discharge summaries for patients without a PCP, as well as held informational tables for HCA employees twice at lunch, and provided clinic information to hospital social workers and new employee trainers. This led to a continuing increase in patients in late 2023.

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HCA Healthcare®

Halifax Health
Family Medicine
Residency Program

Asymptomatic Surprise: Case Report of an Incidental Osteochondroma

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Halifax Health Family Medicine Residency Program, Daytona Beach, FL

INTRODUCTION

- Benign bone tumors are often discovered incidentally during trauma evaluations or unrelated medical investigations.
- Distinctive radiographic features aid diagnosis, with osteochondromas being the most common benign bone tumors.[1]
- Osteochondromas characterized by a cartilage-capped bony spur on the bone's external surface.[2]
- Typically, asymptomatic but can cause pain, functional issues, or deformity.
- Diagnosis involves radiography; MRI recommended for symptomatic cases or concern for malignant transformation.[3]
- Treatment focuses on education, monitoring for clinical changes, and surgical intervention for symptomatic or suspected malignant cases.[4]
- Presented case: Incidental discovery of osteochondroma during RSV bronchiolitis evaluation in a pediatric patient.

CASE SUMMARY

HPI:

- 3-year and 2-month-old female with three days of fever, cough, nasal congestion, and occasional post-tussive vomiting.
- Mild labored breathing, abdominal breathing; sibling admitted with RSV.
- Two-view chest x-ray during emergency department workup revealed a questionable abnormality in the right proximal humerus.
- Admission for hypoxia secondary to RSV bronchiolitis with a plan to further investigate the humerus abnormality.

Focused Physical Exam:

- General: Well-developed, well-nourished child, in no acute distress.
- Skin: Warm, dry, no rashes.
- Right Upper Extremity: 1 to 2 cm prominent mass along the anterolateral aspect of the proximal right humerus, non-tender, no erythema or warmth, full ROM, neurovascularly intact.

HOSPITAL COURSE

- Day 1: Clinical improvement with supportive care; oxygen supplementation as needed.
- No recent injury, pain, or discomfort reported; no history of procedures on the right arm.
- Two-view x-ray of the right humerus revealed a cortically based bony exostosis compatible with a sessile osteochondroma.
- Radiology recommended non-emergent MRI if any pain associated.
- Day 2: Significant improvement, no oxygen supplementation; imaging findings discussed with parents.
- Discharged for follow-up with the pediatrician and further imaging if needed.

IMAGING

DISCUSSION

- Asymptomatic osteochondroma discovered incidentally during RSV bronchiolitis evaluation.
- 30% of benign tumors are Osteochondromas[2]
- Radiographic imaging confirmed the diagnosis, eliminating the need for advanced or invasive procedures.
- Tumor in the proximal humerus poses no immediate issues; MRI recommended for potential complications or malignant transformation.
- Family informed about growth-related discomfort and the rare risk of malignant transformation, emphasizing regular follow-up with the pediatrician.
- 0.4%-2.0% estimated incidence of malignant transformation[4]

CONCLUSIONS

- Osteochondroma, a common benign bone tumor, often appears incidentally during unrelated imaging.
- Prompt diagnosis with simple radiographic imaging crucial for reducing patient and family anxiety.
- Family medicine providers must consider malignant tumors but identifying benign tumors is crucial.
- Radiologists in pediatric imaging play a key role in preventing unwarranted additional workups, contributing to efficient patient care and resource optimization.

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A Unique Presentation of HSV Meningoencephalitis

Alaina Keith, MD
Family Medicine Residency

ORLANDO HEALTH® | Bayfront Hospital

Background

Although there are hundreds of herpesviruses, only eight routinely infect humans. Of those eight, HSV-1 is known to account for approximately 90% of HSV encephalitis[7]. HSV-1 infection is common; it is predicted to infect approximately 54% of individuals aged 14-49, according to a large survey conducted between 2005-2010[1]. Other studies have shown that 60-90% of the older adult population is infected with HSV-1.[8] Although encephalitis is a rare complication of HSV-1, it is the most common cause of sporadic encephalitis worldwide[3]. HSV encephalitis is an extremely rare condition with an estimated annual incidence rate of about 1 in every 2 to 4 million individuals[2]. The majority of cases occur in adults over 50 years of age[5]. The initial presentation of HSV encephalitis is broad; symptoms range from fever, signs of upper respiratory tract infection, altered mental status, seizures, headaches to focal neurological signs. In a study in 106 hospitalized patients, it was found that the most common presentations that brought patients to the hospital included seizures (32 %), abnormal behavior (23 %), loss of consciousness (13 %), and confusion or disorientation (13 %)[6]. Recognizing the signs and symptoms of encephalitis early in the disease course is vital to preserving the life and function of affected individuals. The mortality of untreated HSV encephalitis is roughly 70 %, and 97 % of survivors will not return to their previous level of function[7]. However, prognosis drastically improves with early detection and treatment.

Case Description

A 72-year-old female with a past medical history of hypercholesterolemia and osteoporosis presented to the emergency department with difficulty speaking. She denied any other symptoms including difficulty with gait, sensory deficits, vision changes or recent seizure activity. Her friends who accompanied her to the ED reported that she was playing the flute earlier in the day when she had difficulty changing the notes. Patient denied any pain, recent illnesses, flu-like symptoms, or GI symptoms. She stated this had never happened before.

In the ED, she was initially hypertensive and was transiently tachycardic. She was afebrile and saturating normally. Her mental status was AAOx4. She was trying to speak but had difficulty getting words out. Lab work demonstrated a CBC and CMP within normal limits. Lipid panel:262, LDL 122, HDL 104, triglycerides 180; B12 was 145; Troponin less than 0.03. ECG was normal sinus rhythm; CT head without contrast showed no acute intracranial abnormalities. CT angiogram of head and neck showed no high-grade stenosis or occlusion. CT cerebral perfusion with contrast resulted “questionable prolonged time to drain within the right frontal lobe” with recommendation to obtain MRI. She was not started on alteplase due to being outside of the treatment window for a TIA/Stroke. She received Lipitor, Heparin, Ativan, and she started on normal saline maintenance fluids in the ED.

Timeline of Events (hours since presentation)

In the ED

- Focal seizure activity
- Ativan given
- Transferred to neuro floor

12 hours

- , MRI brain with contrast result indicated infarct vs tumor vs vascular abnormality, attributed to seizures
- Started on Keppra BID

24 hours

- Continued seizure activity
- Addition of Vimpat, Phenobarbital
- Leading diagnosis remained aphasia 2/2 to seizure disorder

48 hours

- Patient became somnolent and difficult to arouse, attributed to sedation effect of additional seizure meds
- Transferred to neuro ICU
- Care transitioned to 2nd neurologist who started IV steroids and ordered LP
- Mental status continued to decline and she was emergently intubated that evening
- EEG shows status epilepticus

72 hours

- Repeat head CT head result: evolving subacute left posterior frontal lobe infarction with no evidence of hemorrhagic conversion.
- Repeat MRI result: worsening diffusion restriction involving left frontal and right temporal lobe.
- Empiric acyclovir started
- Lumbar puncture positive HSV in the cerebrospinal fluid.

Days

- Unfortunately, patient remained in status epilepticus for multiple days while on four antiepileptic medications.
- Patient’s healthcare proxy pursued CMO approximately 10 days after initial presentation.

Discussion

This particular case was analyzed in quality improvement review committees across multiple specialties. Factors impacting the case include unique initial presentation of aphasia, which at that time, more commonly indicated a diagnosis of TIA/Stroke rather than encephalitis. Other factors include a transition of specialist providers during the case, delayed recognition of encephalitis symptoms, delay in initiation of general anti-epileptic medications after first seizure, delay in lumbar puncture, and most importantly, delay in starting empirical treatment with acyclovir. This case illustrates how delayed detection and treatment of HSV encephalitis can be detrimental to patient outcome and how important it is to consider focal neurological defects, including aphasia, as symptoms of HSV encephalitis.

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Improving delivery of diabetes care at a large community-based health center

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Collaborator: Elizabeth Philippe MD[1], Nicole Cook PHD[2], MPA
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Background - Need/Problem

- Diabetes mellitus (DM) is a chronic global epidemic, a major health problem. Globally, 1.5 million deaths are directly related to diabetes each year [1] and diabetes is the ninth leading cause of mortality worldwide [2].
- Glycemic control is critical in diabetic patients for T2DM management. If not strictly controlled, there can be serious diabetic complications, such as retinopathy (blindness), nephropathy (kidney failure), CVD, diabetic ketoacidosis (DKA), and a hyperglycemic hyperosmolar state (HHS) [3]
- Despite the development of new medications over the past decades, a significant proportion of patients in community practice with T2DM especially the socio-economically disadvantaged patients are often under-treated and fail to achieve glycemic goals.

Project goal

Evaluate diabetes medication management and physician recommendation of glucose lowering medication for diabetes mellitus type- 2 considering various cardiovascular co-morbidities in community setting as part of social risk-informed care and identify strategies to improve guideline-concordant care and standardize treatment.

Project Design

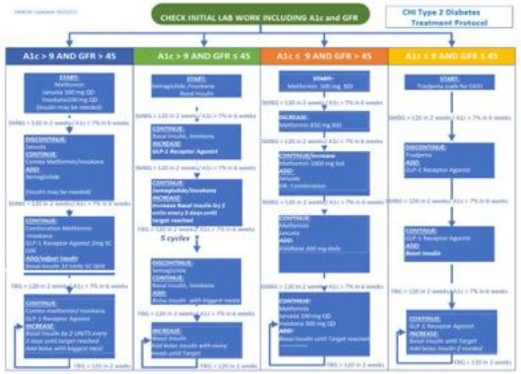
Design: Our quality improvement project follows the Plan-Do- Study- Act (PDSA) improvement framework, a four-step model to documenting a test of change.

Setting: This project is being conducted at Community health of South Florida, Inc, (CHI), a federally qualified health center (FQHC) founded to provide primary care to medically vulnerable populations, including those with multiple social determinants of health.

Project Implementation

- PDSA "PLAN" methods include:
- EHR generated report included patients > 18 years old with documented diabetes type- 2 diagnosis and hemoglobin A1c > or equal to 9 seen at the community health center within the last 3- 6 months.
- A Resident team of 4 during the project conducted chart review
    i. Reviewed problem list and current glucose lowering medication
    ii. Assesses proper diagnostic work in presence of various comorbidities/ CV risk factors
    iii. Presented a common patient centric algorithm for initiation and intensification of glucose lowering medication factoring in patient's comorbidities, during FM providers meeting at CHC.
    iv. Identified factors leading to failure to initiate or intensify therapy according to the guidelines based on benefits and contraindications, or under optimization of diabetic treatment.
- Identify next steps for opportunities for ongoing improvement, dissemination and sustainability as part of PDSA cycle

Diabetes algorithm



Project outcomes

- Our project centered on evaluating diabetes care at a large community health center, specifically examining adherence to protocols for patients with A1c levels above 9.
- The findings indicated variability in the care by family providers that often deviated from guidelines. Despite most of these patients having co-morbidities, there were notable care gaps in the standard management of diabetes. This was evident in instances where individuals were not appropriately prescribed triple oral therapy or insulin, even with persistent A1c readings exceeding 9.
- Additionally, a considerable proportion of patients with worsening A1C levels were inaccurately labeled as diet-controlled and were not prescribed any diabetes medications.
- Concerns about adherence to guidelines were raised due to prescribing patterns, particularly the exclusive use of metformin and sulfonylureas, while recommended SGLTs were neglected.
- The study also uncovered that many patients had comorbidities, with hypertension, hyperlipidemia, and obesity being among the most prevalent.
- Despite this, 18.97% of patients were not placed on statin therapy. Furthermore, kidney function, including GFR and the Albumin/cr ratio, was not consistently assessed for all patients.

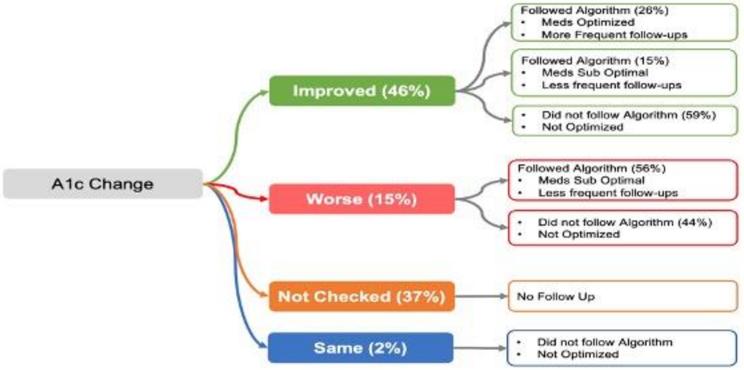
Baseline Demographics

Sex		Age			Race					Ethnicity			A1C Level	
Female	Male	18-44	45-64	65+	White	Black	Unknown	Asian	American Indian	Hispanic	Not Hispanic	Unknown	9 to 10	>10
34	24	13	40	5	30	22	3	2	1	31	26	1	24	34
58.60%	41.40%	22.41%	68.97%	8.62%	51.72%	37.93%	5.17%	3.45%	1.72%	53.45%	44.83%	1.72%	41.38%	58.62%

Presence of Comorbidities					Medication				Statin Therapy		GFR Done		Albumin/Cr		
Hypertension	Hyperlipidemia	Obesity	Other (CAD, CKD, HIV, Neuropathy, Retinopathy)	None	Insulin	Oral	Both (Oral and Insulin)	Unknown	Statin	No Statin	Collected	Not Collected	Collected	Ordered not collected	Not Ordered
36	12	25	16	3	5	20	32	1	47	11	42	16	33	11	14
62.07%	20.69%	43.10%	27.58%	5.17%	8.62%	34.48%	55.17%	1.72%	81.03%	18.97%	72.41%	27.59%	56.90%	18.97%	24.14%

Did things change?

The following parameters were assessed: Baseline A1C (A1C prior to presentation and implementation of common patient centric algorithm); Baseline Therapy (Medications prescribed for management of diabetes).


A1c Change

Improved (46%)

Followed Algorithm (26%)
- Meds Optimized
- More Frequent follow-ups

Followed Algorithm (15%)
- Meds Sub Optimal
- Less frequent follow-ups

- Did not follow Algorithm (59%)
- Not Optimized

Worse (15%)

Followed Algorithm (56%)
- Meds Sub Optimal
- Less frequent follow-ups

- Did not follow Algorithm (44%)
- Not Optimized

Not Checked (37%)

No Follow Up

Same (2%)

- Did not follow Algorithm
- Not Optimized

Discussion

The findings from our project revealed concerning trends in type 2 diabetes management, emphasizing the need for reevaluation and improvements in current practices.However, limitations, such as the retrospective nature, reliance on medical records, focus on a specific health center, and a relatively small sample size, may impact generalizability. The absence of patient interviews and a retrospective design limit nuanced understanding and causal relationship establishment. Despite these constraints, our QI project is a crucial first step in identifying areas for improvement in type 2 diabetes management at community-based health centers. Future research should address these limitations when exploring potential solutions.

It's extremely uncommon for a family physician to not engage in the care of diabetic patients throughout their practice. With the abundance of medications and diverse management plans available for diabetes, identifying shortcomings in standard care becomes crucial to formulate effective strategies and implement a comprehensive care plan. Through this QI project, the development of a well-organized algorithm can significantly enhance physicians' management of diabetic patients. Moreover, addressing the need for frequent monitoring is feasible, as family physicians, prioritizing continuity of care, are well-positioned to facilitate more regular follow-ups allowing proactive adjustments to treatment plans for a thorough and customized approach to diabetic patient care.

Conclusion

Our project underscores the significance of tackling shortcomings in type 2 diabetes management, with a key focus on enhancing prescribing practices, promoting adherence to clinical guidelines, and addressing social determinants of health. These findings serve to refine family medicine protocols and bolster endeavors aimed at refining diabetes care within community health settings, particularly for the vulnerable populations served by federally qualified health centers.

To achieve our goal of meeting the UDS and reducing overall A1c levels, our next step involves conducting periodic reviews of UDS measures and continuing with periodic provider teach-ins to serve as reminders. These actions will help ensure that we stay on track with our objectives and maintain momentum toward improving diabetes management outcomes.

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CLINIC TRENDS IN GLP-1 PRESCRIPTIONS

JACOB LENNERT MD, ADAM LAZARUS MD, JOHN PENNINGTON MD

UNIVERSITY OF FLORIDA

INTRODUCTION

The deleterious combination of diabetes and obesity is a known public health crisis, as these conditions can lead to a wide range of health problems that negatively impact both individuals and society. The economic burden of these conditions is significant, leading to higher healthcare costs and lost productivity in the workforce. Addressing diabetes and obesity continues to be a critical public health priority.

GLP-1 agonists are a class of drugs that were developed to treat type 2 diabetes. They work by mimicking the action of the hormone glucagon-like peptide-1 (GLP-1), which is naturally produced by the body in response to food intake. GLP-1 helps to stimulate insulin secretion, suppress glucagon (a hormone that raises blood sugar), and promote feelings of fullness and satiety.

In addition to their glucose-lowering effects, GLP-1 agonists have also been shown to promote weight loss in people with type 2 diabetes through various mechanisms including appetite suppression, slowed gastric emptying, increased energy expenditure, and reduced adipose storage.

Additionally, GLP-1 agonists have been shown to reduce the risk of cardiovascular events, such as heart attacks and strokes, in people with type 2 diabetes. They have also been shown to have kidney-protective effects in people with type 2 diabetes.

In fact, in March the The Food and Drug Administration has updated Wegovy's drug's label, saying that Wegovy can be prescribed to reduce a person's risk of heart attack and stroke even in patients without diabetes.

Our project aimed to investigate trends in GLP-1 prescription habits of the Department of Community Health and Family Medicine at the University of Florida with particular interest in how the resident clinic at Main Street compared to all CHFM clinics. GLP-1 drugs are a novel therapy, so our analysis was intended to quantify the adaption of these medications which have shown to be a potent tool in the family medicine physician's arsenal of diabetic and weight control options.

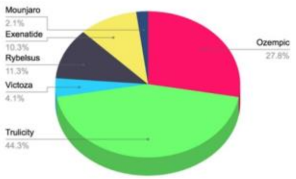
Although GLP-1 medications are impactful for weight loss, cardiovascular health, and CKD in patients without diabetes, for simplicity our project looked at evaluating prescription trends for diabetic and obese patients.

HYPOTHESIS

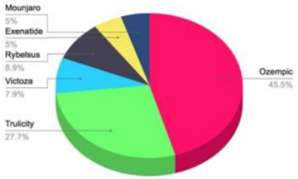
- The residency clinic (Main Street) will have a higher percentage increase of GLP-1 usage in recent years compared to other clinics due to residency education promoting up-to-date, evidence -based practice
- The proportion of GLP-1 scripts prescribed by the resident clinic vs all other CHFM clinics will be different due to socioeconomic and insurance factors impacting GLP-1 availability and selection.
- First-generation GLP-1s such as exenatide will be replaced by newer GLP-1s such as Trulicity, Ozempic, and Mounjaro

GLP-1 PRESCRIPTION CHARTS

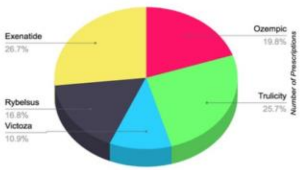
2022 Main Street GLP-1 Usage (n=462)



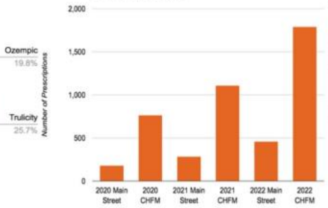
2022 CHFM GLP-1 Usage (n=1793)



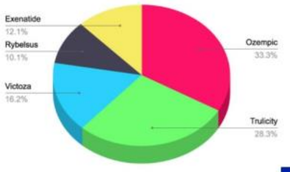
2021 Main Street GLP-1 Usage (n=283)



GLP-1 Prescriptions by Year

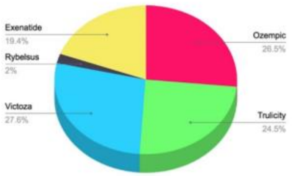


2021 CHFM GLP-1 Usage (n=1110)



2020 Main Street GLP-1 Usage (n=182)

2020 CHFM GLP-1 Usage (n=763)



METHODS/PARTICIPANTS

An EPIC EMR chart review was completed on all patients within the Department of Community Health and Family Medicine at the University of Florida. All patients who were obese (defined by BMI over 30) or type 2 diabetic (as coded on EPIC problem list) and on a GLP-1 medication were counted towards analysis. Analysis was performed for all CHFM clinics in 2020, 2021, and 2022. One patient could only count for one GLP-1 medication. If a patient had multiple GLP-1 drugs in the same year, the medication with most refills or total prescriptions was used towards analysis. Patients were classifed by their clinic home. For the purposes of this analysis, prescription trends were compared between the resident clinic (Main Street) and all CHFM clinics. No personal patient information or health outcomes data was utilized.

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RESULTS

GLP-1 prescriptions in the Main Street clinic increased from 183 to 283 to 462 from 2020-2022.

GLP-1 prescriptions in all CHFM clinics increased from 763 to 1110 to 1793 from 2020-2022.

The resident clinic in 2020 most often prescribed exenatide (43.8%), but in 2022 Trulicity was by far the most prescribed GLP-1 (44.3%).

All combined CHFM clinics in 2020 were relatively evenly split between Ozempic, Trulicity, and Victoza. However in 2022, Ozempic (45.5%) was the dominant GLP-1 followed by Trulicity(27.7%).

Mounjaro represented 5% of all CHFM GLP-1 prescriptions in 2022.

Main Street represented 24% in 2020, 25.5% in 2021, and 25.8% of all CHFM GLP-1 prescriptions.

Year over Year growth of Main Street GLP-1 prescriptions was 55% from 2020 to 2021 and 63% from 2021 to 2022.

Year over Year growth of CHFM GLP-1 prescriptions was 45% from 2020 to 2021 and 62% from 2021 to 2022.

CONCLUSIONS

Main Street prescription proportions are significantly different than overall CHFM prescription proportions likely due to insurance coverages and socioeconomic aspects of respective patient panels. The rate of adaptation of GLP-1s was similar between Main Street and all CHFM clinics. Overall, the proportion and overall quantity of GLP-1 prescriptions has changed vastly in the last several years. This trend will likely continue to do so as major pharmaceutical interests continue to invest in a highly lucrative and clinically significant medical evolution.

Limitations:
We were not able to acquire outcome data showing weight loss or glycemic control of patients. We were not able to compare the percentage of eligible patients (obese+diabetic) on a GLP-1 medication between different clinics. Further investigation can quantify the effect of different GLP-1s on glycemic control and obesity. Additionally, our data was limited in that it was not guaranteed a patient could afford or actually obtain the GLP-1 which was prescribed. Further research could investigate how type of insurance coverage affects GLP-1 selection as there are significant socioeconomic barriers to these medications.

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Recurrent Eczema Herpeticum in Untreated, Severe Atopic Dermatitis

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ORLANDO HEALTH® | Bayfront Hospital

Background

Atopic dermatitis (AD) is one of [if not the] most common chronic inflammatory skin disease, characterized by dry and/or pruritic skin lesions. Eczema herpeticum (EH), or Kaposi's varicelliform eruption, is the rapid dissemination of eczematous skin by herpes simplex viral infection. EH is a relatively rare complication, affecting less than 3% of patients with AD. Predisposing factors of EH include severe atopic dermatitis, early onset of atopic dermatitis, high serum IgE, and history of food allergies or asthma. Eczema herpeticum most commonly affects the head, neck, and trunk. This condition can lead to varying life-threatening complications and is considered a medical emergency. We present a classic case of severe eczema herpeticum that became a diagnostic conundrum confounded by pitfalls leading to delayed diagnosis. This case demonstrates the hurdles of practicing heuristics and how a collaborative care team can overcome that.

Case Description

23 y.o. female with a PMH of eczema, asthma, and bipolar disorder who presented to the ED with worsening, painful, and pruritic rash. Rash started on the neck about 1 week prior to her presentation to the ED. She was assessed in the ED, diagnosed and treated for scabies with topical permethrin cream. Patient endorsed worsening rash following scabies treatment and complained of new onset left eye pain. Rash spread to the face, neck, chest, and arms. She reportedly had similar symptoms 1 year prior while living in Pittsburgh, though not as severe. At that time, she was diagnosed with scabies and treated with permethrin, without exacerbation of symptoms.

In the ED, HR was 120 and BP 134/97. Patient was afebrile. Initial labs were pertinent for WBC 3.6 and glucose 121. Lactate 2.5. Urinalysis was positive for moderate leukocytes and WBC 6-10. Urine culture was negative. Sepsis protocol was initiated, with IVF bolus, blood cultures and IV antibiotics. Patient required IV Dilaudid for pain. Eye exam with Alcaine and fluorescein was negative for corneal lesions, pH 7.

Blood cultures grew many group A streptococcus and few Staphylococcus aureus. Skin punch biopsy was performed with pathology report revealing mild superficial perivascular chronic inflammation without eosinophils. Lesions were swabbed and positive for HSV detected via PCR. Patient was started on IV acyclovir for severe Eczema Herpeticum and transitioned to Keflex for a superimposed streptococcal and MSSA cellulitis. Symptoms were controlled with scheduled Benadryl and IV Solu-Medrol, topical emollients and Vaseline/gauze dressing. Once symptoms were adequately managed, patient was transitioned to p.o. acyclovir 5 times daily for total therapy of 14 days, as per infectious disease's recommendations and discharged home.

During chart review, it was discovered that the patient had a recurrent admission for sepsis secondary to eczema herpeticum with overlying MSSA infection 2, 4, 6, 7 months after discharge. Recurrent admissions likely stemming from inadequately controlled atopic dermatitis due to social factors.

Images

Image 1: Face and Neck

Image 2: Neck and chest

Image 3: Posterior thigh and leg

Discussion

- Patients with atopic dermatitis are more vulnerable to viral infections such as HSV given compromised skin barrier and significantly decreased innate and adaptive immunity.
- AD inflammation is predominantly driven by TH2 cells, which produce IL-4 and IgE. The products of these TH2 cells prevent the differentiation of TH1 cells, which produce IFN gamma. Viral overgrowth takes place in setting of low IFN gamma.
- **Eczema herperticum is a medical emergency, as the condition increases the risk of bacteremia, multi-organ damage, and death.**
- Related infection of the eye, or herpetic keratitis, is a possible complication that may lead to blindness.
- By recognizing eczema herpeticum, physicians can avoid delaying or missing treatment and initiate prompt treatment with IV antivirals, likely acyclovir. Prompt treatment of eczema herpeticum yields better outcomes, to include decreased length of hospital stay and decreased mortality rates.

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HALIFAX HEALTH

Effectiveness of Proactive Physical Therapy Interventions for High-Risk Patients in Preventing Falls:

A Quality Improvement Project at Halifax Medical Center

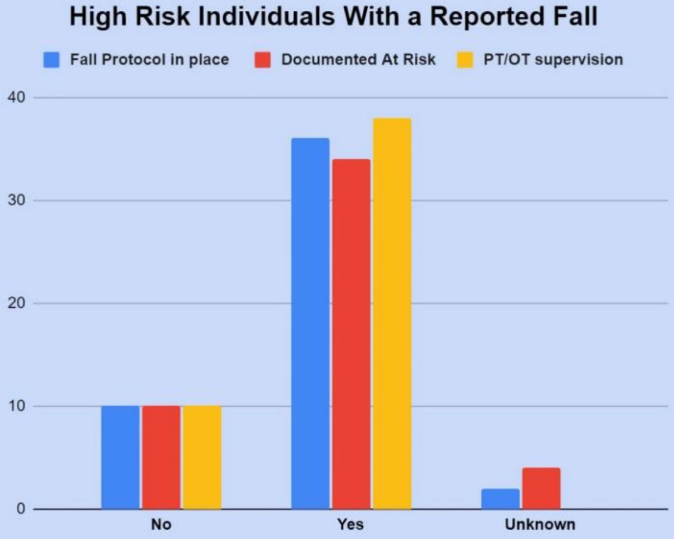
Garner Boogaerts, MD, Hannah Cade, MD, Joseph Christensen, DO, Dianet Falcon, DO, Glendalyn Klein, MD, Michael Krusick, MD, Logan Malter, MD, Braiden Shumway, DO, Michael Heiland, MD, Larissa Raymond, MD, Carrie Vey, MD, Dennis Wen, MD

Background

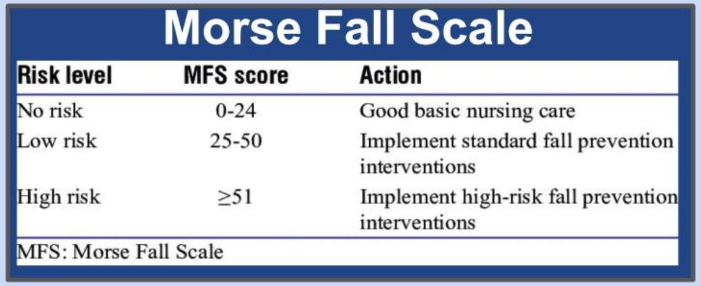
- In the US, between 700,000 and 1,000,000 hospital falls occur annually.
- Over a third of these falls result in patient injury, with approximately 3% being fatal.
- The average cost of a patient fall in a hospital is $60,000, regardless of injury severity.
- Falls resulting in serious injury are considered "never events" by Medicare and Medicaid Services, leading to unreimbursed costs for hospitals.
- Inpatient falls pose significant risks to both patients and hospitals.
- This quality improvement project at Halifax Medical Center aimed to evaluate the effectiveness of proactive physical therapy interventions for high-risk patients identified by the Morse Fall Scale.

Methods

- Retrospective analysis conducted from October 2022 to June 2023 of a med-surg floor of Halifax Medical Center.
- Aimed to determine if high-risk individuals received pre-fall physical therapy assessments.
- High-risk status determined using the Morse Fall Scale completed by nursing staff.
- Out of 48 patients experiencing falls, 34 were identified as high risk by the Morse Fall Scale.
- Among the falling patients, 36 had fall prevention protocols in place.
- Prior to falling, 38 out of the 48 patients had received physical therapy.



Results:



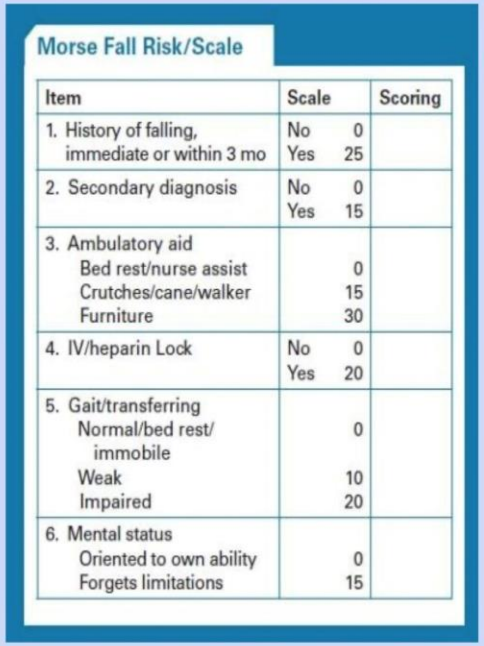
Morse Fall Scale

Risk level	MFS score	Action
No risk	0-24	Good basic nursing care
Low risk	25-50	Implement standard fall prevention interventions
High risk	≥51	Implement high-risk fall prevention interventions

MFS: Morse Fall Scale

Results

- Morse Fall Scale identified 34 out of 48 falling patients as high risk, raising concerns about tool efficacy.
- In 38 of 48 fall cases, patients had received physical therapy before the incident, prompting questions about its preventive effectiveness.
- Study highlights the role of physical therapy for high-risk patients in fall prevention at Halifax Medical Center.
- Despite fall protocols and Morse Fall Scale, notable incidence of falls persists.
- Further investigation warranted to understand contributing factors, evaluate protocol effectiveness, and refine intervention strategies, particularly related to physical therapy.



Morse Fall Risk/Scale

Item	Scale	Scoring
1. History of falling, immediate or within 3 mo	No 0 Yes 25	
2. Secondary diagnosis	No 0 Yes 15	
3. Ambulatory aid Bed rest/nurse assist Crutches/cane/walker Furniture	 0 15 30	
4. IV/heparin Lock	No 0 Yes 20	
5. Gait/transferring Normal/bed rest/ immobile Weak Impaired	 0 10 20	
6. Mental status Oriented to own ability Forgets limitations	 0 15	

Conclusion

- Despite current assessment and prevention strategies implemented for high-risk fall patients at Halifax Health, falls still occurred within this group, even after physical therapy intervention.
- This indicates a need for continuing QI projects to better assess high-risk patients and implement new protocols aimed at preventing such incidents.
- There is an opportunity to refine existing strategies and introduce innovative approaches to enhance fall prevention efforts among high-risk patients at Halifax Health.

HALIFAX HEALTH
FAMILY MEDICINE
RESIDENCY PROGRAM

Improving Diabetic Care: The Impact of an Encounter Template on Physician Adherence to Quality Measures

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VanDemark, Melanie MD; Greenblum, Jesse MD; Degele, Julie MD; Shrinath, Kushagra MD

Halifax Health Family Medicine Residency Program, Daytona Beach, FL

BACKGROUND

- 38.4 million are Americans diagnosed with diabetes, a number which represents approximately 11.6% of the population in the United States.[1]
- The annual healthcare cost of diagnosed diabetes was approximately $413 billion in 2022.[1]
- CMS, ADA, and others in the early 2000s initiated the Diabetes Quality Improvement Project, out of which came standard performance measures for diabetes care.[2]
- Despite clear guidelines, the average care of diabetic patients continues to leave significant room for improvement in meeting these measures.[3]

HYPOTHESIS

We hypothesized that creating and implementing a standard outpatient encounter template, which automatically includes quality measure reminders that are consistent with the Diabetes Quality Improvement Project recommendations for managing diabetic patients, would improve physician adherence to diabetic quality measures during patient visits.

PARTICIPANT DEMOGRAPHICS AND ELIGIBILITY

- Participants were twenty-four family medicine residents and eight family medicine faculty members in an outpatient community clinic setting.
- Data was collected from patients seen between September 2022 and February 2024 by the aforementioned physicians with one of twenty-four common ICD codes for type II diabetes.

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METHODS

Pre data collection via EMR

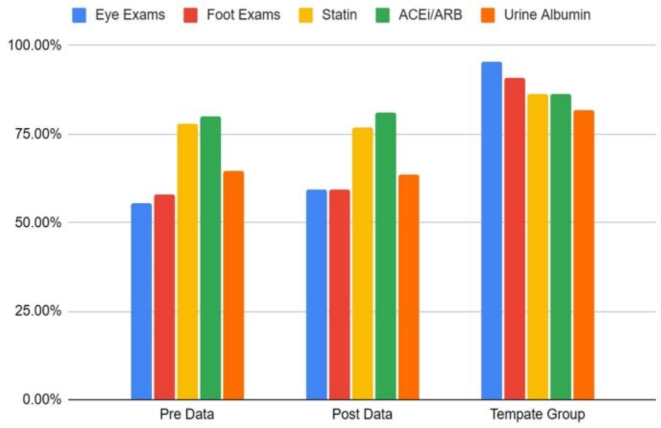
Template creation

Template implementation and instruction

Post data collection via EMR

- Utilized Athena Electronic Medical Record (EMR) reporting to identify patients seen by residents and faculty within one year of data collection (September 2023).
- Targeted patients with one of twenty-four common ICD codes for type 2 diabetes. Conducted a manual chart review for compliance with diabetic quality measures.
- Created an encounter template for diabetes quality measures which was implemented October 1, 2023.
- A post-implementation review (October 2023 to February 2024) compared adherence to quality measures.
- Pre and Post data was analyzed for differences between pre and post data and also between pre data and the data for just the group of patients the intervention was implemented on
- Analysis was done using a two sample proportion test, with an alpha level of 0.05
- A1c data was collected but ultimately was not included in the analysis as nearly all patient encounter data in the pre and post data sets included A1cs. A1c data was missing for 6 patients across the combined pre and post data set out of 119 patient encounters and may have been due to transcription error during data collection or issues with these few results not appropriately populating in the EHR as orders could be found for most of these missing values.

RESULTS



	Eye Exams	Foot Exams	Statin	ACEi/ARB	Urine Albumin
Percent Difference	39.90%	33.13%	8.59%	6.36%	17.37%
P-Value	0.00095	0.00604	0.40395	0.52350	0.14445

CONCLUSIONS

- For the patients who had the standardized template used by their physician, a statistically significant difference was seen in documentation of ordered eye exams and foot exams, with non-statistically significant increases in all other diabetic quality measures.
- A larger study will need to be done to see if there is a real difference in compliance with ACEi/ARB, Statin, and Urine Albumin, as the analysis was limited by a small sample size (29 unique patients had visits in which the template was used). A larger, and longer study, would also be able to determine if the increases seen in compliance are sustainable over time. Future studies could also explore if patient metrics could be used to positive effect in further increasing compliance with treatment standards.
- This quality improvement project shows a standardized template can increase physician compliance with established diabetes quality measures.

Inappropriate ICS Use in Patients with COPD at CFM Clinic

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BACKGROUND

COPD is often managed inappropriately. Patients are often started on inhaled corticosteroids (ICS) but are at low risk for exacerbation, and do not have an elevated blood eosinophil level (BEC). Patients with a BEC <100 cells/μl have the lowest benefit with ICS treatment and have an increased risk of pneumonia.[1] ICS treatment is associated with both local and systemic adverse effects which include respiratory infections, bone fractures and diabetes related outcomes.[2] It is important to note that BEC should be used in tandem with exacerbation risk when considering ICS use, per *2024 Gold Report.*[3]

OBJECTIVE

The purpose of this QI project was to determine which COPD patients, at the Centre of Family Medicine (CFM), our residency clinic, were inappropriately managed with an ICS-containing regimen, based on their BEC level.

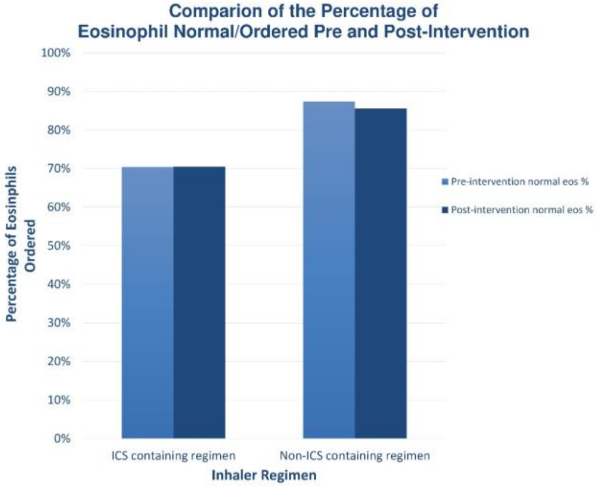
METHODS

This QI project was completed over 4 months, analyzing COPD patients who were >18 years of age at CFM clinic. Patients were stratified into two groups based on their treatment regimen: ICS containing and non-ICS containing. Within these two groups, BEC levels were measured and patients on an ICS containing regimen with a normal BEC were identified as candidates for ICS deprescription. Providers that were listed as the PCP were directly contacted and recommendations were made to change their patient's inhaler regimen. They were also surveyed on whether they knew the current recommendations from the *2024 Gold Report.*

RESULTS

Table 1: Eosinophil Levels in Patients on ICS Containing and Non-ICS Containing Regimens Pre- and Post-Intervention

		ICS containing regimen	Non-ICS containing regimen
Pre-Intervention	n	151	793
	Eosinophil Ordered	142	652
	Eosinophil Abnormal	42	82
	Eosinophil Normal	100	570
	Pre-intervention normal eos %	***70.40%***	***87.40%***
Post-Intervention	n	190	818
	Eosinophil Ordered	183	700
	Eosinophil Abnormal	54	101
	Eosinophil Normal	129	599
	Post-intervention normal eos %	***70.50%***	***85.60%***


Comparion of the Percentage of Eosinophil Normal/Ordered Pre and Post-Intervention

DISCUSSION

- This project showed no significant change in the number of patients on an ICS containing regimen pre- and post-intervention (P=0.9391).
- Eleven providers, who were listed as the PCP, were contacted through the EMR, and informed that their patient(s) with a normal BEC were on an ICS. Recommendations to deprescribe the ICS were made, if the provider deemed it appropriate.
- Eight out of the eleven providers mentioned that they did not know the current recommendations per the *2024 Gold Report.*[3]
- Several providers mentioned that their patient's COPD was managed by a pulmonologist. Comments included: *"Thank you for bringing this to my attention. I was not aware of this recommendation. It seems that Trelegy Ellipta is prescribed by his pulmonologist, however I will be sure to review this with the patient at his next visit."*
- Several patients in this project also had several other comorbidities along with COPD. A comment by a provider included: *"This patient has dementia, COPD, chronic aspiration and is s/p lung cancer. This aspect of her care is being managed by pulmonology."*

CONCLUSION

There were several difficulties with this project. Many patients identified as candidates for ICS deprescription did not have a PCP listed on the EMR. Also, a large majority of patients were managed by a pulmonologist. This project would also benefit from a longer duration which would ensure better follow-up. Overall, provider education is important in caring for patients with COPD.

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Comparison of preterm delivery rates and other obstetric diagnoses before and during the COVID pandemic

HCA Florida
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Background

- There were many changes that occurred in our lives due to the pandemic. There were times that businesses closed, required masking occurred, and many jobs shifted to working at home. Because the effects were felt nationwide, this opportunity allows for observational studies for the effect a pandemic has on common medical conditions.
- Some studies in the United States have found a decrease in the rate of preterm delivery, others show there is no difference in the rate of preterm birth during the pandemic (1,2,3).

Objective

To determine if there was a difference in preterm deliveries during the pandemic at our hospital.

To determine if there is a difference in other obstetric diagnoses during the pandemic.

Methods

The HCA Healthcare corporate database was queried for data on normal births at the hospital from Jan, 1, 2017 to Dec. 31, 2022. We excluded multiple gestation, COVID positive, placental disorders and chromosomal abnormalities. All data was collected as mother/baby pairs for women age >18 years old. This study was determined to be exempt by the HCA Healthcare GME Institutional Review Board.

Variables included:

- Gestational age (term or pre-term [<37 weeks])
- Time period
    - Pre-COVID (1/1/2017 – 2/28/2020)
    - COVID (3/1/2020 – 12/31/2022)
- Type of delivery (C-section or vaginal)
- Small for gestational age (yes or no)
- Gestational HTN (yes or no)
- Gestational DM (yes or no)
- Nulliparity (yes or no)
- Race/ethnicity (African American, Hispanic, White, Other)

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

Results

Comparison of variables by time period

Variable	Pre-COVID (N=28,044)	COVID (N=23,311)	P-value
Gestational age			
Pre-term	10.59%	9.97%	0.452
Term	89.41%	90.03%	
Type of delivery			
C/S	47.55%	46.21%	**0.002**
Vaginal	52.45%	53.79%	
SGA			
Yes	6.26%	6.92%	**0.003**
No	93.74%	93.08%	
Gestational HTN			
Yes	11.88%	14.50%	**<0.001**
No	88.12%	85.50%	
Gestational DM			
Yes	6.95%	7.69%	**0.001**
No	93.05%	92.31%	
Nulliparity			
Yes	41.93%	42.05%	0.793
No	58.07%	57.95%	
Race/Ethnicity			
African American	35.60%	36.94%	**<0.001**
Hispanic	46.75%	50.36%	
Other	4.33%	3.13%	
White	13.31%	9.57%	

Comparison of variables.

Variable			P-value
	Pre-COVID (N=28,044)		
Gestational age	**C/S**	**Vaginal**	
Pre-term	9.95%	6.51%	**<0.001**
Term	90.05%	93.49%	
	During COVID (N=23,311)		
Gestational age	**C/S**	**Vaginal**	
Pre-term	10.28%	5.98%	**<0.001**
Term	89.72%	94.02%	
	Pre-COVID (N=28,044)		
SGA	**C/S**	**Vaginal**	
Yes	7.70%	4.96%	**<0.001**
No	92.30%	95.04%	
	During COVID (N=23,311)		
SGA	**C/S**	**Vaginal**	
Yes	8.40%	5.65%	**<0.001**
No	91.60%	92.30%	

Conclusion

When comparing the two time periods, there was not a difference in pre-term births at our hospital. The statistically significant difference, while interesting, are not clinically significant. Our results add to the body of literature for delivery outcomes during the COVID-19 pandemic.

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A Walking Case of Extensive Klebsiella pneumoniae Mimicking Lung Cancer

HCA Florida
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Background

Friedlander's pneumonia (FP) caused by *Klebsiella pneumoniae (KP)* is a severe form of community acquired pneumonia (CAP) [1]. *KP* is Gram negative, non-motile, encapsulated, facultative anaerobic bacillus that usually causes fulminant, lobular, abscess-forming pneumonia (PNA) with predilection for the right upper lobe (RUL) [1]. FP is prevalent in alcoholism, chronic pulmonary diseases, and immunocompromised individuals with the highest incidence in developing countries and in Asia [1,5]. Atypical presentation of PNA such as hemoptysis and weight loss with heavy smoking history makes lung cancer a likely possibility [2]. We report a case of FP that mimics lung cancer in a 40-year-old Hispanic male with extensive smoking history who presented with chills, weight loss, cachexia, hemoptysis, dyspnea, and profound lung mass on imaging. This case exemplifies the vital role of histopathology in assisting with diagnosis, provides an opportunity to promote smoking cessation, and helps to bridge the healthcare gap in the undocumented population.

Objective

Lung cancer can mimic the clinical presentation of an infectious lung disease, which can lead to a diagnostic challenge. Here we discuss the role of tissue biopsy to rule out lung cancer, early recognition and accurate diagnosis for appropriate treatment, and emphasis on smoking cessation.

Case Report

- 40-year-old male of recent immigrant from Honduras w/ history of smoking 1 PPD x 27 years presented with dyspnea, cough, hemoptysis, chills, fever, night sweat, chest pain, weight loss for a 2 week period.
- Exam: cachectic, right-sided crackles & decreased breath sounds. RR 32, HR 128, 37.8 C, sat 97% on room air, 116/68
- Labs: WBC 29.2, neutrophil 86.2, Hb 8.5, Na 126, AST 219, ALT 151, ALP 219, CRP 131, Covid negative, troponin <2.5
- CXR: profound airspace consolidation of RUL & midlung (Fig 1). CTA chest: 11.3 x 15.5 x 23.6 cm RUL mass (Fig 2)
- Started on piperacillin/tazobactam and cefepime. 2L nasal canula to keep saturation >90%
- HIV, syphilis, acid-fast bacillus (AFB) sputum x3, AFB smear x3, carcinoembryonic antigen (CEA) were negative.
- Suspect post-obstructive pneumonia given the history and clinical presentation. IR-guided biopsy of RUL was done.
- Bronchoscopy x 2 with purulent secretions and biopsies negative for malignancy.
- *KP* was isolated from sputum & blood culture sensitive to Ceftriaxone.
- Bronchoalveolar lavage (BAL) findings from RUL suggestive of an abscess.
- Patient declined surgical intervention and opted for antibiotic.
- Repeat blood culture to ensure of clearing of bacteremia was negative.
- Stable for discharge with 6 weeks of amoxicillin/clavulanate per Infectious Disease and Pulmonary recommendations.

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

Images & Results

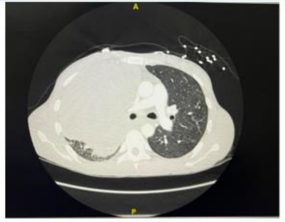
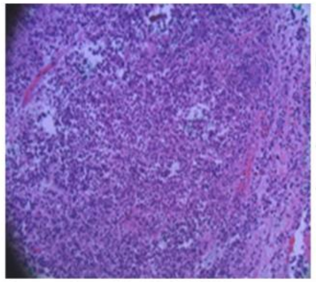


Fig 1 (Left)- CXR AP view: Profound airspace consolidation of the RUL and midlung, sparing the left side

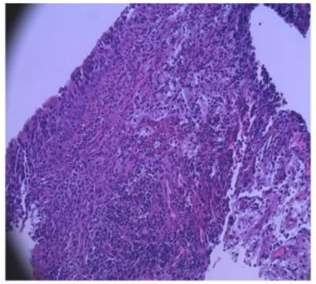
Fig 2 (Right)- CTA chest axial view: 11.3 x 15.5 x 23.6 cm RUL mass



Source: Spec # Su22:OP:1977

RLM, image-guided core biopsy

- Extensive necrosis with acute inflammation. No malignancy identified
- Comment: findings may represent a lung abscess
- Image shows neutrophils in a necrotic background (H&E 10x)

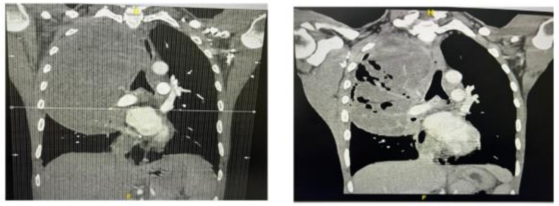


Source:SU23:OP2101

BAL, RUL, biopsies

- Bronchial mucosa w/ severe acute inflammation and focal histiocytes
- Other fragments showed necrosis and acute inflammation
- GMS and AFB negative for fungus and mycobacteria
- Image shows neutrophils in a necrotic background (H&E stain, 20x)
- CD163: diffusely positive in foamy appearing macrophages

CT chest on admission vs after bronchoscopy)



Discussion

Post-obstructive PNA can occur at different stages of lung cancer and may be the initial clinical manifestation of malignancy [2]. The pathophysiology involves infection of lung parenchyma secondary to bronchial obstruction, commonly seen in those with underlying lung diseases, as well as smokers, leading to poor clearance of secretions and bacteria [2]. The workup to rule out lung malignancy was imperative here due to the extensive smoking history and clinical presentation of weight loss, hemoptysis, and profound upper lung mass [6,7,8]. The microbial findings from sputum and blood culture were significant for *KP*. IR-guided biopsy of RUL and BAL x2 showed extensive necrotic tissue with severe acute inflammation suggestive of lung abscess, and no malignancy identified. After thorough discussion, patient declined surgical intervention and opted for antibiotic treatment. The limitation of treating the lung abscess with only antibiotic is possibly failure of treatment if the patient has immunodeficiency [3]. Repeated blood culture to ensure of clearing of bacteremia was negative, and patient was stable for discharge with 6 weeks of amoxicillin/clavulanate.

In retrospect, this patient was a recent undocumented immigrant from Honduras about 2 months prior to admission. Unfortunately, undocumented immigrants are likely to be uninsured which creates barriers to getting adequate healthcare. We were able to inform this patient that even without insurance, he can receive medical care at certain federally qualified health centers on a sliding scale. Smoking cessation and routine primary care visits were highly emphasized. Having regular health check up will ensure appropriate screening and prevention to help patients and reduce unnecessary medical burden.

Conclusion

In conclusion, lung diseases may share similar manifestations making accurate diagnosis challenging. Fortunately, this turned out to be a case of Friedlander's pneumonia that was very extensive, and no malignancy was found. This case demonstrates the vital role of tissue biopsy to definitively rule out malignancy and assist clinicians in developing appropriate plan of care. Additionally, smoking is a modifiable risk factor that is the leading cause of lung cancer [4]. Smoking cessation is always encouraged.

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A Case of Primary Sclerosing Cholangitis in the Post COVID-19 World

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BACKGROUND & SIGNIFICANCE

- Primary Sclerosing Cholangitis (PSC) is an immune-mediated, chronic cholestatic liver disease, characterized by inflammation and fibrosis of intrahepatic and extrahepatic bile ducts.
- PSC can lead to cholangitis, biliary cirrhosis, and end-stage liver disease.
- Diagnosing PSC in the presence of positive COVID-19 antigen may present challenges due to possible overlap of symptoms and anchoring bias.

PURPOSE

It is our goal to highlight the importance of maintaining a broad differential during the initial work-up of a disease process and avoiding delay of diagnosis.

METHODS

Chief complaint: 27-year-old male with headache, fever, body aches, dark urine, yellowing of the skin and eyes, and persistent cough for approximately one week

Past medical history: None

Past surgical history: None

Vitals: BP: 128/69 HR: 106 R: 18 O2 Sat: 100% on room air T: WNL

METHODS (CONTINUED)

Physical Exam: He was alert and oriented, appeared jaundiced, and scleral icterus was noted. His abdomen was mildly distended with RUQ tenderness to palpation, negative murphy sign, no rebound, no rigidity, no hepatosplenomegaly, no hernias, no masses.

RESULTS

Lab Results

Lab	Value
Alanine Aminotransferase (ALT)	176 u/L
Aspartate Aminotransferase (AST)	71 u/L
Alkaline Phosphatase (ALP)	230 u/L
Total Bilirubin	9 mg/dL
Direct Bilirubin	7.7 mg/dL
Lipase	91
Lactic Acid	1.8
Hepatitis Panel	Negative
ANCA Panel	Negative
ANA Panel	Negative
Alpha-1-alpha-trypsin	401
Acetaminophen Level	<2.0
Smooth Muscle Antibody	18
Ammonia Level	<10
HIV/HSV/CMV/EBV	Negative
Ferritin	649
Leukemia/Lymphoma Panel	Negative
Platelets	222 K/uL
INR	1.2
D-dimer	3.59

RESULTS (CONTINUED)

Diagnostic Results

Diagnostic testing	Result
Magnetic Resonance Cholangiopancreatography (MRCP)	No choledocholithiasis, no biliary duct dilatation
Computerized Tomography (CT) of abdomen and pelvis	No evidence of biliary dilation or biliary mass. Periportal and portal caval lymphadenopathy
Hepatic Doppler	Within normal limits
Elastography	Within normal limits
CT PE Protocol	No evidence of PE, mediastinal LAD

COVID Results

COVID testing	Result
Antigen testing	Positive
PCR testing	Negative

Liver Biopsy

- The patient was discharged after marked improvement in his
- bilirubin and liver function tests.
- Liver biopsy showed significant neutrophilic infiltrate, portal tract edema, ductal proliferation, and fibrosis.
- Pathology diagnosis was acute cholangitis with consideration for primary sclerosing cholangitis.

DISCUSSION

Interpretation of Results

- In the post-COVID-19 world, there is a greater risk of anchoring bias, which may result in a missed or delayed diagnosis and inappropriate treatment.
- Patients may present a higher risk of cirrhosis, liver failure, hepatocellular cancer, colon cancer, and cholangiocarcinoma.
- This case underscores the need for specific testing (i.e., PCR testing vs. antigen testing), which may be advocated for in COVID-19-related cases.

Recommendations for Practice

- Recognize the need for broad differentials during patient care encounters and recognize the negative impact of anchoring.
- Consider advocating for PCR testing vs antigen testing when COVID-19 is present and may be a confounding factor.
- Consider liver biopsy for confirmatory testing as there may be indications for subsequent testing and screenings.

Conclusion

This case emphasizes the potential impact of anchoring and shows the benefits of a broad differential. A positive liver biopsy suggesting PSC highlights the need to explore beyond COVID-19 induced hepatitis and the advantages of COVID-19 PCR testing for timely diagnosis and opportunities for appropriate screenings.

References available upon request

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TALLAHASSEE
MEMORIAL
HEALTHCARE

Bilateral Bell's Palsy as Presenting Symptom for Neurosyphilis

A Case Report of a Unique Presentation of Neurosyphilis

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Background

Syphilis, caused by the spirochete *Treponema pallidum* has a pathognomonic presentation as primary, secondary, and tertiary. It is important to remember that Syphilis can cause many unique presenting symptomatic findings. This case report aims to highlight a unique initial symptomatology of neurosyphilis, and the importance of broad differentials during neurological workup.

Introduction

From 2021 to 2022 reported cases of Syphilis increased in the US by 32%. Known as the "Great Imitator" with its many presentations and broad effects over a variety of organ systems, practitioners must remain vigilant to possible atypical presentations of this increasingly common STI. Primary Syphilis, known for its painless chancre, is often considered in a differential when a patient presents with a genital lesion. We classically think of secondary Syphilis with its rash on the palms and soles, constitutional symptoms, adenopathy, and unique findings such as condyloma lata. Tertiary Syphilis however can be elusive, associated with gummas, a "tree-barking" aortic aneurism, Argyll Roberson pupils, and dorsal column damage. But historically, Syphilis was notorious for not adhering to cut-and-dry silos.

Hospital Course

M, a 24-year-old male with a history of Hemoglobin SC, type 2 diabetes mellitus, hyperlipidemia, recent COVID infection, a sexual history of having male partners, and a one-month history of right-sided facial droop who presented to the emergency room with intractable headaches, sickle cell pain crisis, and now bilateral Bell's Palsy. He was seen prior for unilateral Bell's Palsy on the right side, completed 7 days oral prednisone without resolution.

A week after completing the steroid course, he woke up with bilateral Bell's Palsy with an intractable headache and presented to the emergency room. Initially he underwent a negative stroke work-up including negative CT without contrast and MRI head w/ contrast with cranial nerve thin slice protocol.

On physical examination he was found to CN VII findings consistent with bilateral lower motor neuron palsy. Dark macules were noted on his bilateral hands and feet which the patient claimed was due to working outside as a landscaper, however, his rash was highly suspicious for secondary Syphilis skin findings(see below).

Initial testing showed a positive RPR with a 1:64 titer and a reactive reflex FTA absorption, normal B12, HIV, TSH, Lyme, ESR, CRP, HSV 1+2, ANA. LP was performed and showed pleocytosis with 33 WBC and a glucose of 97. Gram-stain was negative, and the CSF VDRL was negative. However, he was a difficult LP and had received Penicillin G prior to successful tap under fluoroscopy. Aqueous Penicillin G was begun with assistance from Infectious disease consult for presumed neurosyphilis.

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Discussion

In 2001, the United States had over 50,000 new cases of non-congenital HIV, while Syphilis hit a nadir of less than 6,000 new cases. However, the last 20 years has shown alarming rises in the rates of Syphilis. In 2019, almost 40,000 cases of Syphilis were reported, a 650% increase. And not just nationally, but across the world, rates of Syphilis have been on the rise since the turn of the century, including congenital Syphilis.

This is despite the USPSTF 2016 "A" recommendation for screening for Syphilis infection in nonpregnant adults who are at increased risk for infection. Epidemiologically, men are far more likely to have Syphilis, particularly the MSM population. However, the last 20 years have shown increases in rates among women as well, so any high-risk sexual behavior should be in consideration.

Neurosyphilis must be considered in any patient presenting with positive Syphilis serology and new onset neurologic symptoms. Neurosyphilis may occur at any period of the disease, from the first few weeks of infection to many years after initial infection.

One must also give special consideration to Syphilis in patients with HIV, as incidence in HIV populations is 77 times greater than the general population. Standard lumbar puncture in patients with primary or secondary Syphilis is not indicated but should be reserved for patients displaying neurologic symptoms.

Conclusion

Our patient exhibited the classic finding of pleocytosis with WBC 33 on CSF studies. Other diagnostic criteria for neurosyphilis include CSF FTA-Abs (highly sensitive), CSF VDRL (highly specific), but not as much CSF protein. Treatment continues to favor penicillin given that there is no Treponemal resistance. Even with a penicillin allergy, recommendations continue to be desensitization then initiate neurosyphilis dosing. Treatment guidelines are to use aqueous crystalline penicillin G, 3 to 4 million units IV every 4 hours for 10 to 14 days; or penicillin G procaine, 2.4 million units IM once daily, plus probenecid, 500 mg orally four times daily, with both drugs given for 10 to 14 days.

Quadriparesis Secondary to Relapsing and Remitting CLIPPERS: A Case Report

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Background

Chronic lymphocytic inflammation with pontine perivascular enhancement responsive to steroids (CLIPPERS) is an idiopathic and rare neurological disorder that affects the spinal cord, brainstem, or cerebellum. Clinical presentation varies, but diagnosis should be suspected from clinical and radiographic changes with corticosteroid administration and cessation. Radiological evidence of CLIPPERS includes perivascular enhancing lesions on MRI, more pronounced in T2. Confirmative diagnosis is made through neuropathology, in which biopsy shows perivascular CD3-positive T-lymphocytes, B-lymphocytes, or macrophage infiltrates, with possible parenchymal infiltration or tissue destruction in the meninges, white matter, or grey matter. CLIPPERS is treated with long-term corticosteroids, with the aim of preventing flares and reducing the burden of disability. Without treatment, patient often encounter a relapsing and remitting pattern of disease, and can suffer from permanent disability or even death without intervention.

Case Description

HPI:

- 33-year-old male, no past medical history, presented with gradually worsening proximal extremity weakness that started 18 months ago in his shoulders, spread down his arms, and has progressed to his hips and legs
- Mild improvement six months ago, but symptoms returned three months later, and has gradually worsened since
- Associated upper and lower extremity paresthesias and low back pain

Family history positive for lymphoma in his mother

Social history positive for past cocaine use, but never any IV drug use

Physical exam:

- Positive Lhermitte's sign and muscle atrophy of his upper back and shoulders bilaterally with decreased muscle bulk, left worse than right
- Remaining neurological exam depicted in Table 1

Laboratory studies:

- Leukocytosis of 9.5 with lymphocytic predominance
- Remainder of serum infectious/inflammatory/metabolic workup was negative
- Lumbar puncture found increased level of protein without other abnormal findings

Imaging studies:

- MRI brain without contrast was negative.
- **MRI cervical spine with contrast showed increased T2 signal and enlargement of the cervical spinal cord from C4 to C7, measuring 5.4cm, with enhancement at C5 to C6 and C6 to C7, concerning for a neoplastic process, as seen in Figure 1.**

Strong concern for malignancy– additional imaging ordered

- CT chest, abdomen, and pelvis with contrast all negative
- MRI thoracic spine and lumbar spine with contrast also negative

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

Case Description

Patient started on IV methylprednisolone 1g daily for 1 week– resulted in significant clinical improvement, as seen in Table 1.

- **Repeat MRI cervical spine showed improved spinal cord expansion and intramedullary edema, with a residual poorly-defined enhancement from C5 to C6, smaller than the previous study, as seen in Figure 2.**

Patient monitored off IV corticosteroids for 1 week– resulted in marked worsening of neuromuscular functioning, as reported in Table 1.

- **Repeat MRI cervical spine reflected worsening cord compression and intramedullary edema compared to one week prior, as seen in Figure 3.**

Patient opted for cervical laminectomy and open biopsy with debulking of the lesion.

- Intra-operatively, no discrete tumor was encountered
- Sections of the lesion were sent for pathological examination

Post-operatively:

- Received 4 days of post-operative IV dexamethasone 4mg every 6 hours
- Improved range of motion and strength of his extremities
- Able to ambulate
- Continued residual sensation deficits and mild weakness of his upper extremities

Post-operative course was stable

- Corticosteroids discontinued
- Discharged to rehab while awaiting final pathology report

Table 1. Neurological Changes throughout Admission

Neurological Testing	On admission	After 1 week on IV corticosteroids	After 1 week off IV corticosteroids
Upper Extremities	Bilateral deltoids 0/5 Bilateral biceps 0/5 Bilateral triceps 3/5 Interosseous muscles 5/5	Right deltoid 3/5 Left deltoid 4/5 Bilateral biceps 4/5 Bilateral triceps 4/5 Interosseous muscles 5/5	Bilateral deltoids 3/5 Right biceps 3/5 Left biceps 4/5 Bilateral triceps 4/5 Interosseous muscles 5/5
Lower Extremities	Bilateral hip abduction 4/5 Bilateral hip adduction 4/5 Bilateral hip flexion 4/5 Bilateral hip extension 5/5 Bilateral knee flexion 5/5 Bilateral knee extension 5/5	Bilateral hip abduction 5/5 Bilateral hip adduction 5/5 Bilateral hip flexion 5/5 Bilateral hip extension 5/5 Bilateral knee flexion 5/5 Bilateral knee extension 5/5	Bilateral hip abduction 5/5 Bilateral hip adduction 5/5 Bilateral hip flexion 5/5 Bilateral hip extension 5/5 Bilateral knee flexion 5/5 Bilateral knee extension 5/5
Sensation	Diminished in upper extremities	Improved	Diminished in upper extremities distally and spreading proximally
Grip Strength	Diminished grip strength bilaterally, with left worse than right	Improved	Diminished bilaterally
Ability to Walk	Unable to walk	Able to walk	Able to walk, but patient reported stiffness and weakness in his legs

Case Description

Figure 1. Initial MRI C-Spine

Figure 2. MRI C-Spine after 1 week on IV corticosteroids

Figure 3. MRI C-Spine after1 week off IV corticosteroids

Figures 1, 2, and 3 show the radiological changes from the initial and subsequent cervical spine MRIs while on and off corticosteroid therapy.

Final pathology results: GFAP-positive neural tissue with perivascular lymphocytic aggregates of T-cell predominance, strongly positive for CD3, with a small portion positive for CD20. No malignancy.

Rehab course: patient's quadriparesis returned– became wheelchair-bound and fell

- Case discussed with rehab physician, oral corticosteroid therapy initiated
- Patient able to walk after 4 days of oral methylprednisolone 20mg per day

Conclusion

Learning points:

- CLIPPERS showcases a unique pattern of disease progression, with consistent clinical and radiological responses to initiation and withdrawal of corticosteroids
- Understanding the characteristics of CLIPPERS will help patients obtain early intervention, ultimately preventing long-term or permanent disability.
- Additional research is needed to identify alternative treatment regimens that do not include long-term corticosteroid use

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Copy and Paste

HCA Florida Orange Park Hospital

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Jessica El Bahri, MD; Patricia Gilford, MD, Robyn Meadows, MA

Background

Residents are taught the importance of documentation. Throughout the patient's hospital stay, many parameters change daily. Examples include: vitals, lab work, imaging, antibiotics, specialists' recommendations and/or plan for the patient. If these are not updated daily then the medical record does not encapsulate the total picture of the care of the patient. This makes it difficult for the next doctor to follow up on care of the patient. This also makes it difficult for billing to be done correctly. For example, if one note mentions that the patient is waiting for an MRI and then it gets done that day and the note for the next day is copy and pasted and still states that patient is waiting for the MRI. This can cause confusion for both the doctor and the insurance companies.

Objective

To teach the importance of documentation and how it can affect patient care outcome. To Improve accuracy and integrity of documentation.

Methods

120 charts were reviewed. 60 charts were looked at initially and then a presentation was created to teach residents about copy and paste issues and how to avoid it. Post implementation of the teaching, we reviewed 60 more charts to see if there was a correlation with improvement of documentation after implementing the education. We looked at copy and paste issues in 3 specific areas: HPI, Physical Exam and Assessment/Plan sections.

Study period: January 2024 to January 2024

3 areas of interest:
HPI
Physical Exam
Assessment and Plan

120 total charts reviewed. 60 charts reviewed, then residents educated on copy and pasting issues. 60 more charts reviewed after education.

Results

Table 2. Overall Cloning Rate Pre-Implementation vs Post-Implementation.

	Pre-Implementation		Post-Implementation			
Service Line	***N***	**%**	***N***	**%**	χ^{2*}	***p*-value**
All	47	72.31	60	89.55	6.39	0.012
Behavioral Medicine	3	60.00			-	-
Cardiology	3	100.00	1	100.00	-	-
Family Medicine			6	75.00	-	-
Gastroenterology	1	100.00	2	100.00	-	-
Hematology/Oncology	2	100.00			-	-
ICU	11	78.57	2	50.00	-	0.533
Internal Medicine	25	65.79	45	97.83	15.38	<0.0001
Nephrology			2	100.00	-	-
General Surgery	1	100.00	2	50.00	-	-
Urology	1	100.00			-	-

Table 3. HPI Cloning Rate Pre-Implementation vs Post-Implementation.

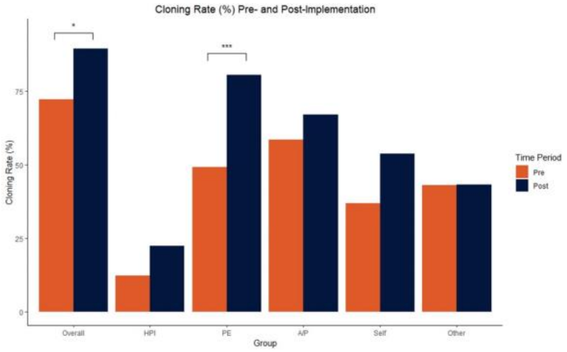
	Pre-Implementation		Post-Implementation			
Service Line	***N***	**%**	***N***	**%**	χ^{2*}	***p*-value**
All	8	12.31	15	22.39	2.33	0.127
Behavioral Medicine	0	0.00			-	-
Cardiology	0	0.00	0	0.00	-	-
Family Medicine			1	12.50	-	-
Gastroenterology	1	100.00	1	50.00	-	-
Hematology/Oncology	0	0.00			-	-
ICU	0	0.00	2	50.00	-	-
Internal Medicine	7	18.42	9	19.57	0.02	0.894
Nephrology			1	50.00	-	-
General Surgery	0	0.00	1	25.00	-	-
Urology	0	0.00			-	-

Table 4. PE Cloning Rate Pre-Implementation vs Post-Implementation.

	Pre-Implementation		Post-Implementation			
Service Line	***N***	**%**	***N***	**%**	χ^{2*}	***p*-value**
All	32	49.23	54	80.60	14.30	0.0002
Behavioral Medicine	2	40.00			-	-
Cardiology	2	66.67	1	100.00	-	-
Family Medicine			5	62.50	-	-
Gastroenterology	1	100.00	2	100.00	-	-
Hematology/Oncology	2	100.00			-	-
ICU	6	42.86	2	50.00	-	1.000
Internal Medicine	17	44.74	41	89.13	19.19	<0.0001
Nephrology			2	100.00	-	-
General Surgery	1	100.00	1	25.00	-	-
Urology	1	100.00			-	-

Table 5. A/P Cloning Rate Pre-Implementation vs Post-Implementation.

	Pre-Implementation		Post-Implementation			
Service Line	***N***	**%**	***N***	**%**	χ^{2*}	***p*-value**
All	38	58.46	45	67.16	1.07	0.301
Behavioral Medicine	3	60.00			-	-
Cardiology	3	100.00	0	0.00	-	-
Family Medicine			2	25.00	-	-
Gastroenterology	1	100.00	1	50.00	-	-
Hematology/Oncology	1	50.00			-	-
ICU	10	71.43	2	50.00	-	0.569
Internal Medicine	19	50.00	39	84.78	11.78	0.0006
Nephrology			1	50.00	-	-
General Surgery	1	100.00	0	0.00	-	-
Urology	0	0.00			-	-



Conclusion

- After educating staff on issues regrading copy and paste, the data showed that there was no improvement in accuracy of documentation. Surprisingly there was a worsening across all aspects of the study. This was clinically significant when looking at all of the combined data. Individually, when looking at the different areas such as copying within HPI or physical exam or assessment and plan, there was actually increase in the amount of copy and pasted material. This was clinically significant for physical exam and assessment and plan.

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Brodes H. Hartley, Jr.
Teaching Health Center

Metformin Mystery: A case study of Metformin induced subacute degeneration of the spinal cord with normal B12 levels

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CHI
COMMUNITY HEALTH of SOUTH FLORIDA, INC.

BACKGROUND

Subacute combined degeneration of the spinal cord is a neurological issue linked to low levels of vitamin B12. This deficiency often stems from poor diet, absorption problems in the gut, or medication usage. It results in the degeneration of spinal cord columns due to the loss of myelin, leading to symptoms like sensory deficits, tingling, weakness, coordination problems, and altered gait. Severe cases can progress to spasticity and even paralysis. Prompt identification and treatment of vitamin B12 deficiency are crucial to prevent worsening symptoms and maintain quality of life. Vitamin B12 is vital for myelin integrity, as it serves as a cofactor for enzymes essential in myelin synthesis, facilitating nerve transmission.

CASE

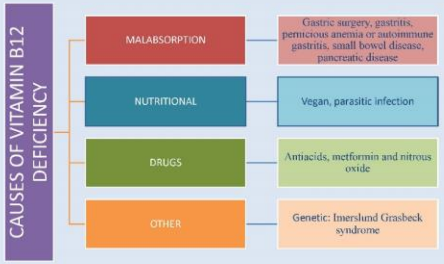
A 64-year-old woman from Haiti, with a medical history including type 2 diabetes, asthma, and dyslipidemia, presented at the clinic with symptoms of spasticity, tingling, unsteady movements, and difficulty walking. She reported these symptoms starting 18 months ago, worsening over the last 6 months with increased difficulty walking. The patient mentioned being diagnosed with type 2 diabetes three years ago in Brazil, following symptoms like frequent urination, fatigue, and leg tingling.

Initially prescribed Metformin 500 mg twice daily, her dosage was adjusted during follow-up, reaching a maximum of 4 grams daily. Tests revealed macrocytic anemia, with an elevated mean corpuscular volume (MCV), vitamin B12 deficiency, and elevated Methylmalonic Acid levels. Despite normal folate levels, a peripheral blood smear indicated macrocytic anemia with normochromic red blood cells showing schistocytes and ovalocytes.

With a BMI of 25, she was diagnosed with chronic vitamin B12 deficiency, likely due to long-term Metformin use. Treatment involved weekly Cyanocobalamin injections for a month and referral to physical and occupational therapy.

DISCUSSION

What are the causes of vitamin B12 deficiency?



CAUSES OF VITAMIN B12 DEFICIENCY

MALABSORPTION — Gastric surgery, gastritis, pernicious anemia or autoimmune gastritis, small bowel disease, pancreatic disease

NUTRITIONAL — Vegan, parasitic infection

DRUGS — Antiacids, metformin and nitrous oxide

OTHER — Genetic: Imerslund Grasbeck syndrome

How does metformin cause B12 deficiency ?

Metformin can induce B12 deficiency in around 10-30% of patients receiving it, primarily by interfering with calcium-dependent ileal absorption of the B12-intrinsic factor complex. However, calcium supplementation can mitigate metformin's impact on B12 absorption.

What is the outlook for subacute combined degeneration of the spinal cord?

Subacute combined degeneration of the spinal cord can lead to optic nerve damage, resulting in abnormal pupil responses and vision loss. Timely referral to an ophthalmologist for evaluation is crucial. Demyelination causes damage to the dorsal and lateral columns, but early treatment initiation enhances the likelihood of full recovery, ideally within weeks of symptom onset. Delayed treatment or late diagnosis may impede progress and lead to permanent impairment. While imaging may be necessary for differential diagnosis, specific factors such as age, disease duration, and MRI findings can aid in prognosis.

In the presented case, the patient initially displayed normal vitamin B12 levels. However, diagnosis was facilitated by elevated Methylmalonic acid levels, which are highly indicative of severe vitamin B12 deficiency. Elevated methylmalonic acid levels often correlate with deficient serum vitamin B12 levels, highlighting the importance of this diagnostic marker.

CONCLUSION

In summary, it's imperative for primary care physicians to regularly assess serum vitamin B12 levels in patients on chronic medications like metformin to prevent potential health complications and preserve overall quality of life. While vitamin B12 deficiency related to metformin use typically manifests after prolonged usage, even patients receiving overtreatment may experience severe deficiency. Physicians should stress the importance of timely follow-up and repeated testing to ensure adequate replacement and maintenance of vitamin B12 levels.

RECOMMENDATION

The Community Health Center of South Florida, Inc. continues to encourage providers to monitor Vitamin B12 levels through routine testing for patients on chronic metformin use. In a recent study that was done in our institution, Vitamin B12 testing among patients on metformin for more than 181 days increased from 2% before the education to 11% after the education, opportunities to educate providers about the importance of Vitamin B12 level monitoring among patients on metformin exists. Family practice residents are currently developing further educational programs to deliver to prescribing providers at upcoming Grand Rounds. In addition, we are assessing the role of targeted reinforcement with individual providers who have low Vitamin B12 rates. Vitamin B12 deficiency takes years to occur. When suspected, physicians should always ask for a methyl malonyl acid level, as patient with borderline low normal of vitamin B12 could still be deficient.

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Inpatient Case of Pemphigus Vulgaris

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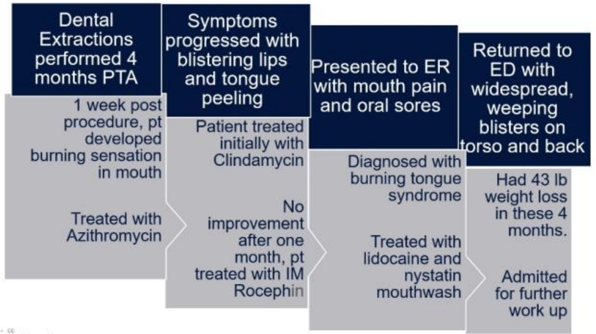
Introduction

- Pemphigus Vulgaris (PV) is a rare, autoimmune bullous disease that impacts the skin and mucosal membranes. [1]
- Patients are most often afflicted by the disease in middle-age, with an average onset of diagnosis between 50-60 years. [1,2,3]
- The most common initial presenting feature of PV is the formation of oral lesions. [2,7]

Case Presentation

CC: 43 y/o M with rash – started as small circular lesions that progressed into black-grey pruritic lesions



Dental Extractions performed 4 months PTA
- 1 week post procedure, pt developed burning sensation in mouth
- Treated with Azithromycin

Symptoms progressed with blistering lips and tongue peeling
- Patient treated initially with Clindamycin
- No improvement after one month, pt treated with IM Rocephin

Presented to ER with mouth pain and oral sores
- Diagnosed with burning tongue syndrome
- Treated with lidocaine and nystatin mouthwash

Returned to ED with widespread, weeping blisters on torso and back
- Had 43 lb weight loss in these 4 months.
- Admitted for further work up

•Labs:

- •CBC with eosinophilia
- •RPR, CMV, EBV, Hepatitis, HIV, HSV, VZV, Mpox, Quantiferon Gold, and CD4 testing unremarkable
- •Negative ANA, c-ANCA, and p-ANCA
- • Flow cytometry had no overt evidence of lymphoproliferative disease
- •IgG panel was notable for elevations of IgG4

Pathology:

- Multiple punch biopsies were performed
- Direct immunofluorescence a pattern of epidermal intercellular deposition of IgG in C3, suggestive of autoimmune bullous disease

Treatment:

- •60 mg of intravenous methylprednisolone every 6 hours and oral doxycycline 100 mg every 12 hours

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

Images

Discussion

- Pemphigus Vulgaris is a potentially fatal autoimmune disease that requires close follow up due to a high incidence of relapse. [4,5]
- PV can mimic various disease processes, which unfortunately leads to misdiagnosis and diagnostic delays. [6, 7]
- The gold standard for diagnosis is the identification of IgG and C3 autoantibodies by direct immunofluorescence. [4]
- Corticosteroid administration is the mainstay treatment approach for PV. [4,5]

Conclusion

PV is a rare autoimmune disease that targets mucocutaneous tissue and can imitate a multitude of diseases. It is important to increase physician education about the various presentations of PV. Early diagnosis is associated with improved outcomes as response to treatment correlates with severity of disease. In the case presented, an earlier diagnosis may have prevented progression to cutaneous involvement and minimized both patient suffering and healthcare related costs.

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Candida Auris: An Etiological agent of Catheter associated urinary tract infection in US hospitalized patient

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Introduction

Candida Auris (C.Auris) is an invasive infection associated with high mortality rate,variable resistance patterns to typical antifungal used to treat, and difficult in identifying and control of the pathogen.

The clinical manifestation of C.Auris is similar to that of other Candida species. It has been isolated from different body sites, including nose,pharynx, lung, pleural cavity, heart, blood, abdominal cavity, urine,etc. Isolates from non-sterile body sites such as Genitourinary tract, skin and lung are colonization then actual active infection. The major complications of invasive C.Auris vary depending on the extend of the infection, host comorbidities, and resistance patterns. While the most common presentation are bloodstream infection, it can spread hematogenous to seed different organs causing multi-organ dysfunction. [1]

We are presenting a case of African American male patient who presented to the Emergency room for shortness of breath. Further evaluation revealed C. Auris. We are discussing identifying C. Auris and decreased the misdiagnosed species and variable resistance pattern to typical antifungal treatment.

Case Presentation

History: A 19-year-old African American male presented from home, with chief complaint of shortness of breath which worsen in the past 3 days. Patient has a past medical history of paraplegic secondary a gunshot wound, that required having a chronic indwelling urinary catheter, lower deep vein thrombosis, chronic pain, anxiety and depression. He has history of surgical history include tracheotomy, sternotomy, thoracotomy and exploratory laparotomy. No history of smoking, alcohol, or drug use. No known allergies.

The patient was previously admitted with pulmonary edema and *Klebsiella pneumoniae*-related catheter-associated urinary tract infection (CAUTI) and was treated with IV Meropenem infusion. He was subsequently readmitted to the hospital for worsen shortness of breath with pulmonary edema and UTI.

Focused Physical Exam:
Vitals: Temp 36.6-degree C, HR 106, RR 20 , BP: 140/95, pulse ox 96% Room Air
Constitutional: NAD, tracheostomy tube open to room air
Cardio: S1/S2 Normal Heart Sounds
Resp: Decreased breaths sounds bilaterally, normal chest expansions
GU: Foley catheter with collection of urine
Extremities: Muscle atrophy noted to extremity

Results

Hgb 12.6, HCT 39.3, MCV 78 WBC 8.6, Plt 292
Na 140, K 4.3,Bun 10, Creatinine 0.73, Lactic acid 0.6

UA: Urine protein 1+
Ketones 3+
Blood 2+
Nitrites neg
Urine Leukocytes Esterase 250
Urine WBC 21-50
Urine RBC>100

Urine Culture Candida Auris

Candida auris on CHROMagar Candida, here, for example, displays multiple color morphs. [2]

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

Hospital Course

From previous admission, patient urine culture grew ESBL Klebsiella. Patient had PICC and was receiving Meropenem IV. However, urine culture during this hospitalization show C.Auris.

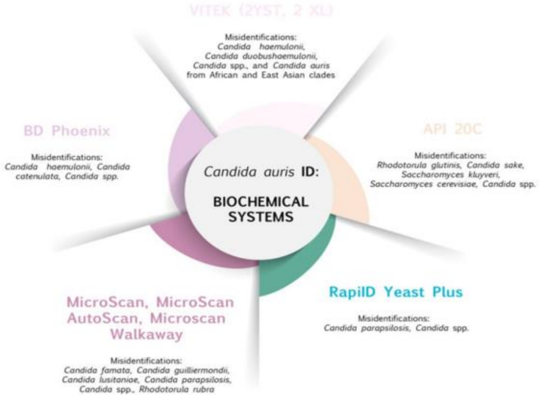
For his newly diagnosed C.Auris, patient was required strict contact isolation. He was started on Micafungin for 14 days.

Mycology Culture: Candida Auris Sensitivities

Drug	Results	Unit
Voriconazole	4	ug/mL
Andulafungin	0.25	ug/mL
Caspofungin	0.125	ug/mL
Fluconazole	256	ug/mL
Itraconazole	0.5	ug/mL
Isavuconazole	0.125	ug/mL
Posaconazole	0.06	ug/mL
*Micafungin	0.06	ug/mL
Amphotericin B	0.25	ug/mL

Discussion

C. Auris identification misdiagnosed species/strains



Candida auris ID:
BIOCHEMICAL SYSTEMS

VITEK (2YST, 2 XL)
Misidentifications:
Candida haemulonii, Candida duobushaemulonii, Candida spp., and Candida auris from African and East Asian clades

API 20C
Misidentifications:
Rhodotorula glutinis, Candida sake, Saccharomyces kluyveri, Saccharomyces cerevisiae, Candida spp.

RapID Yeast Plus
Misidentifications:
Candida parapsilosis, Candida spp.

MicroScan, MicroScan AutoScan, Microscan Walkaway
Misidentifications:
Candida famata, Candida guilliermondii, Candida lusitaniae, Candida parapsilosis, Candida spp., Rhodotorula rubra

BD Phoenix
Misidentifications:
Candida haemulonii, Candida catenulata, Candida spp.

Biochemical-based methods commonly used to identify *C. auris* and species associated with misidentification issues [3]

C. auris is considered a multi-drug resistant organism that requires timely and accurate identification in patient to effectively reduce the spread in a hospital setting.

Discussion

Dose information for Adults and Children ≥ 2 months of age

Echinocandin Drug	Adult dosing	Pediatric dosing
Anidulafungin	loading dose 200 mg IV, then 100 mg IV daily	not approved for use in children
Caspofungin	loading dose 70 mg IV, then 50 mg IV daily	loading dose 70mg/m²/day IV, then 50mg/m²/day IV (based on body surface area)
Micafungin	100 mg IV daily	2mg/kg/day IV with option to increase to 4mg/kg/day IV in children at least 40 kg

CDC, Treatment and management of C.auris infection and colonization [4]

Most strain of C. auris found in the United States have been susceptible to echinocandins. However, pan resistant cases are increasing.

Treatment plans of *C. Auris* are inconsistent and have ranged from no treatment to prolong combination of antifungal therapy. The lack of standards draws attention to the lack of information and guidelines in the medical field.

Conclusion

In summary, Candida Auris is a multi/pan drug resistant which makes the treatment a higher challenge with a high rate of treatment failure in all antifungals classes. It is critical in correctly identifying patients with C. Auris in order to contain its spread within the hospital. We need to place official guidelines to correctly isolate, obtain cultures and best method to avoid misidentification as well as medical treatment to have the best outcomes.

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A Case Study of Adult-Onset Seizures in a Person with Untreated HIV

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Baptist Health
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BACKGROUND & SIGNIFICANCE

- Neurocysticercosis (NCC) is caused by the larval stage of the pork tapeworm, *Taenia solium*.
- Transmission occurs through contaminated food or direct fecal-oral contact, with larvae migrating to various organs including the brain.
- Common symptoms include seizures, headaches, and cognitive impairment.
- NCC is prevalent in regions with poor sanitation and hygiene practices, such as Latin America, Southeast Asia, and sub-Saharan Africa.
- Increased travel from endemic regions has led to rising cases in non-endemic areas like the United States, emphasizing the need for awareness and prevention strategies.

PURPOSE

- Describe the differential diagnosis of adult-onset seizures.
- Understand the importance of incorporating a person's travel history when constructing differential diagnoses.

CASE DESCRIPTION

- 35-year-old female named Jane Doe (JD) from Latin America
- Recently immigrated to the US
- Presented to the emergency department after a witnessed seizure
- Had a previous seizure 7 years ago in her home country
- HIV infection for 16 years, without treatment for the last 5 years

DIAGNOSTIC EVALUATION

Diagnostic differentials

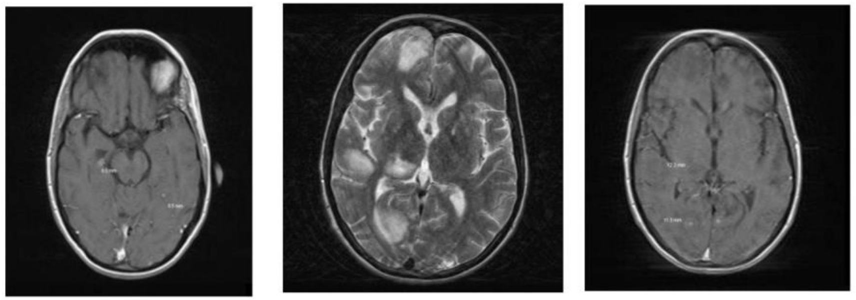
- Considered CNS lymphoma, toxoplasmosis, and NCC for differential diagnosis based on patient history, immigration, and HIV status.

Imaging

- MRI showed calcified supra and infra-tentorial lesions, vasogenic edema, and internal septation.

Labs

- CD4 count: 16
- HIV viral load: 992,000
- Tuberculosis: Negative
- Syphilis: Negative
- Toxoplasmosis: Negative
- Cytomegalovirus: Negative
- Herpes simplex: Negative
- Strongyloidiasis: Negative
- Hepatitis Panel: Negative
- Enzyme-linked immunoelectrotransfer blot (EITB) for NCC antibody: Pending



CLINICAL COURSE

Started on Keppra for seizure prophylaxis upon admission.

Physical Exam was noncontributory.

JD met Infectious Diseases Society of America criteria for NCC infection.

Started on a 14-day course of albendazole and praziquantel for NCC treatment.

Given dexamethasone for 48 hours before antiparasitic treatment to prevent exacerbation of neurological symptoms.

Initiated on Biktarvy and Bactrim for PCP prophylaxis.

Discharged after 12 days in the hospital and scheduled for close outpatient follow-up until completion of antiparasitic treatment.

DISCUSSION

- Comprehensive patient history, including travel, is crucial for diagnosing conditions endemic outside the US.
- Clinicians need awareness due to increased international travel for potential infectious diseases uncommon in the US.
- New-onset seizures or neurological symptoms may indicate neurocysticercosis (NCC) in endemic regions.
- Parasitic infections should be considered in differential diagnoses for neurological symptoms, even though NCC is rare in the US.
- Early diagnosis and treatment of NCC are vital to prevent further neurological damage and improve patient outcomes.
- Clinicians must know NCC signs, symptoms, and the importance of travel history for patients with neurological symptoms.
- Proper interventions can reduce NCC's morbidity and mortality, emphasizing the need for vigilance among clinicians.

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The Great Masquerader – Vitamin B 12 Deficiency

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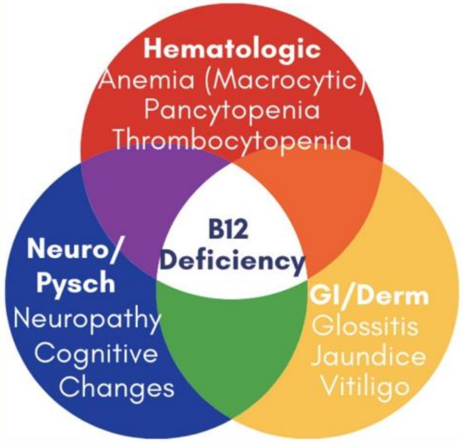
University of South Florida Morton Plant Mease Family Medicine Residency

Background

Vitamin B12 (Cobalamin) is a vital water-soluble vitamin.

- Naturally occurs in fish, beef & dairy products
- Plays significant roles in DNA synthesis, hematopoiesis & myelin sheath formation
- Deficiencies occur due to GI malabsorption, medication interactions, autoimmune disease or poor diet
- Common etiology of macrocytic anemia leading to vague presenting symptoms: fatigue, weakness, & dyspnea with exertion
- Profound deficiencies in vitamin B12 can resemble the hematologic emergency known as thrombotic thrombocytopenic purpura (TTP) which has a high mortality rate and requires plasmapheresis



Hematologic
Anemia (Macrocytic)
Pancytopenia
Thrombocytopenia

Neuro/ Pysch
Neuropathy
Cognitive Changes

GI/Derm
Glossitis
Jaundice
Vitiligo

B12 Deficiency

Initial Presentation

67-year-old male, accompanied by his sister, presented to establish care with two weeks of progressive jaundice and confusion.

- Social history: Strict vegetarian, significant alcohol consumption.

Hospital Course

Clinical work up in the ED was notable for **severe macrocytic anemia (Hg = 4.2 g/dL)** and thrombocytopenia, along with **markedly elevated indirect bilirubin**, LDH and low haptoglobin.

- Underwent urgent HD catheter placement and plasmapheresis due to concerns the patient was presenting with TTP
- Required five PRBC transfusions
- Further testing was remarkable only for **profound vitamin B12 deficiency**, value <148 pg/mL (normal range 213-816) without genetic evidence of heritable TTP including normal ADAMSTS13 activity.
- Hemolytic markers improved with intramuscular B12 supplementation.
- **Follow up testing positive for intrinsic factor antibody testing leading to diagnosis of pernicious anemia.**

Differential Diagnosis

- Acute liver failure & hepatic encephalopathy
- Ascending cholangitis
- CVA
- Vitamin deficiency
- Hemolytic anemia

Who to Screen for B12 Deficiency?

- Gastric or small intestine resections
- Inflammatory bowel disease
- Use of metformin >4 months
- Use of PPIs or histamine H_2 blockers >12 months
- Vegans or strict vegetarians
- Adults older than 75 years

How to Treat

- No neurologic deficits: 1 mg IM B12 three times per week for two weeks
- Neurologic deficits present: 1 mg B12 IM very other day for up to three weeks or until no further improvement
- Strict Vegans: Continue PO supplement

Discussion

- B12 anemia can commonly have a multimodal reason for their deficiency.
  - Patient with different etiologies for his severe B12 deficiency: limited vegetarian diet lacking in dietary B12 supplementation and was also found to have clinical findings of pernicious anemia.
- Wide array of clinical presentations of B12 deficiency: mild macrocytic anemia to life threatening microangiopathic anemia.
- Potential clinical and laboratory findings associated with this clinical presentation of severe B12 deficiency due to its mimicking features of TTP that require emergent hematologic interventions.
- Previous case studies with limited discussion regarding the bio-psycho-social components at play within the presenting patients, the etiology of their various B12 deficiencies or discussion regarding the outpatient screening and management of patients at risk with B12 deficiency.

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TALLAHASSEE MEMORIAL HEALTHCARE

When You Hear Hooves…Sometimes It's The Zebra: A Case Report of Hereditary Coproporphyria (HCP)

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Southeast HEALTH
ALABAMA COLLEGE OF OSTEOPATHIC MEDICINE

INTRODUCTION

- **Porphyrias are a group of disorders that occur due to deficiencies in one of the eight enzymes involved in the heme biosynthesis pathway and accumulation of upstream metabolites (Fig. 1).**
- **Porphyrias are categorized in different ways based on:**

Location of enzyme deficiency

Hepatic **Erythropoietic**

Inheritance pattern

AR **AD** **X-linked**

- **These disorders manifest as acute, recurrent, debilitating neurovisceral attacks with:**
  - **Abdominal pain**
  - **Urinary symptoms**
  - **Skin lesions**
  - **Psychological changes**
  - **Nervous system dysfunction**

OBJECTIVES

- **Present a recent case of hereditary coproporphyria (HCP) diagnosed and treated at Tallahassee Memorial Healthcare (TMH).**
- **Acknowledge the importance of developing broad differential diagnoses, even in the face of common, nonspecific chief complaints.**

CASE DESCRIPTION

- **Patient is a 19-year-old female with a history of PID, MDD, chronic marijuana use, and recent cholecystectomy who presented with recurrent episodes of severe abdominal pain associated with intractable nausea and vomiting.**
- **She had multiple ED visits and admissions at TMH and other hospitals due to similar symptoms that resolved with conservative management.**
- **Patient had completed a thorough work up including an EGD, colonoscopy, and gastric emptying study which were all normal.**
- **Recent imaging was consistent with chronic cholecystitis and/or biliary dyskinesia so a cholecystectomy was performed.**
- **She was also found to have a right ovarian cyst and OCP use was advised.**
- **Despite these treatments, patient continued to have episodes of severe abdominal pain.**

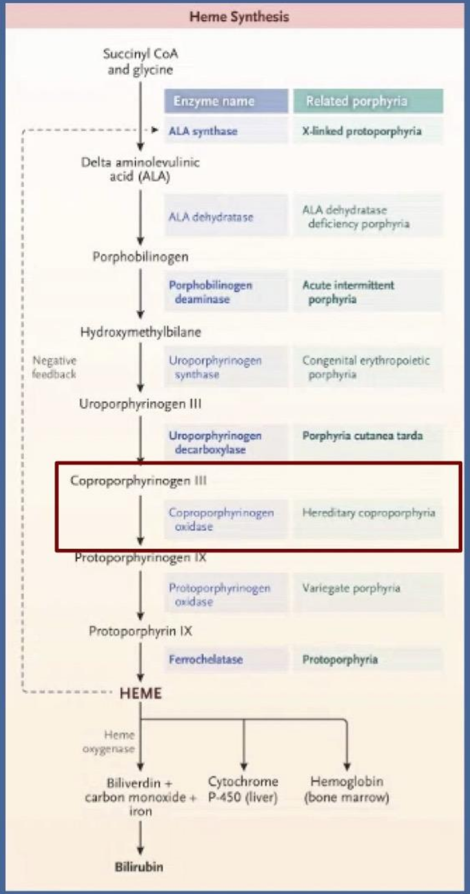

Figure 1: Heme biosynthesis pathway

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HOSPITAL COURSE

- **Admission labs showed leukocytosis with left shift, mild AGMA, mild anemia, normal lipase, negative UA, STI panel, and urine pregnancy test. UDS was positive for cannabinoids.**
- **CT abdomen/pelvis was not suggestive of acute GI process or postop infection.**
- **Other abnormalities were noted during admission including AMS, persistent HTN, and increasing LFTs.**
- **Porphyria was considered in a broad differential diagnosis. Patient's urine porphyrin panel showed elevated levels of coproporphyrin I and III.**

CONCLUSIONS

- **Porphyrias should be considered in patients with unexplained abdominal pain.**
- **Diagnosis requires strong clinical acumen due to low penetrance, limited genetic testing, and current "rarity" of disease.**
- **Primary care physicians can have a substantial impact on morbidity and mortality of patients with porphyria through:**
  - **Early diagnosis**
  - **Identification of life-threatening sequela**
  - **Prompt initiation of appropriate treatment**
  - **Coordination of care with specialists**
  - **Patient/family education**
  - **Long term surveillance for development of related chronic conditions**

Student Category

Medical Student Perception and Utilization of AI technology in Family Medicine Clerkship

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1 - University of South Florida Morsani College of Medicine
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USF Health

Introduction

- Large language models (LLM) such as ChatGPT can answer clinical queries and form differentials.
- LLM's can answer board-style medical questions accurately[1].
- These models could assist students on their clinical rotations.

Study Objectives

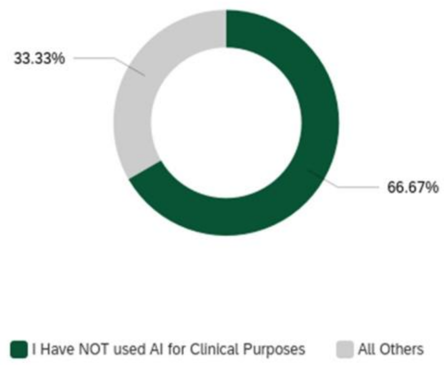
- To Investigate perceptions and usage of LLM's among medical students in their Family Medicine clerkships
- We hypothesize that ethical concerns and utilization will improve by rotation end.

Methods

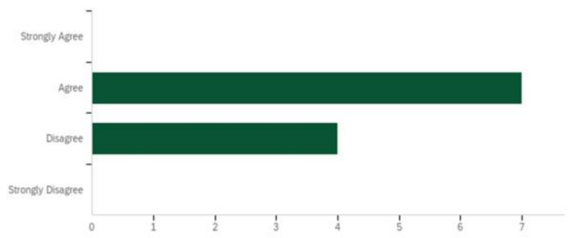
- A pre- and post-survey were distributed to medical students on their Family Medicine rotation, along with a guide on using LLM's.
- Survey data will be analyzed by a statistician.

Results

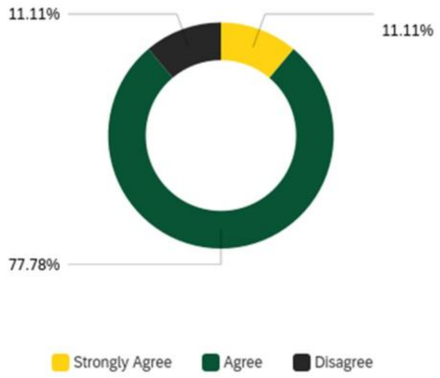
How have you used AI clinically?



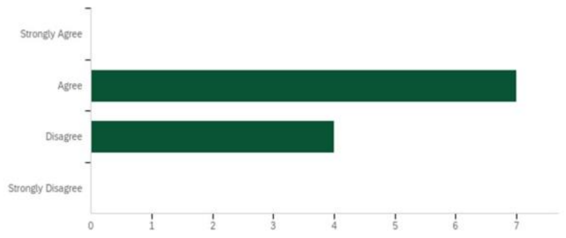
AI is helpful in forming differential diagnoses.



I am concerned about the ethical implications of AI.



AI is helpful in forming clinical lines of questioning.



- A total of 11 responses were obtained from a cohort of 21 students.

Specific ethical concerns included:

- "Concern about computers diagnosing patients who they are not capable of evaluating fully."
- "I can see how AI could be useful for generating differentials, but it still seems strange for use in clinical settings."
- " [I] do not want to be replaced by robot."

Discussion and Conclusion

- There was very limited experience with LLM's in this cohort.
- Most agree the technology is useful but have concern for its ethical implications.
- Clerkships could provide formal curricula on LLM's, with education on proper use and ethical concerns.
- Future research could follow student use as LLM's become more prevalent.
- Post-survey responses are still being collected to analyze the impact of an educational guide as an intervention.

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A Case of Esophageal Food Impaction with Distal Esophageal Spasm and A Sliding Hiatal Hernia

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1. Nova Southeastern University Dr. Kiran C. Patel College of Osteopathic Medicine 2. Internal Medicine Program at Larkin Community Hospital

Introduction

- Sliding hiatal hernias are a movement of the esophageal junction above the diaphragm. Up to 50 to 94 percent of patients with gastroesophageal reflux disease (GERD) have a sliding hiatal hernia. However, studies also show mechanical causes of esophageal food impaction can be a presentation of hiatal hernias especially if co-occurrence with distal esophageal spasm (DES).
- Video fluoroscopic swallow study are the preferred modalities for assessing oropharyngeal bolus transit and provides luminal assessment and assists in evaluating esophageal motility especially in patients presenting with food impaction.

Figure

Figure 1: Coronal non-contrast thoracic A significant amount of food material is noted in the esophagus. CT images showing a type 1 hiatal hernia.

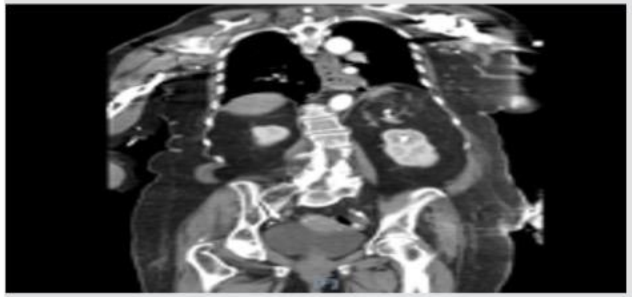


Figure 2: Barium esophagogram showing a dilated, tortuous esophagus.

Case Presentation

History

- A 95-year-old female with a history of dementia presented to the Emergency Department with foreign body sensation and discomfort in the esophagus. No further history could be obtained given her mental status.

Vitals

- On admission, the patient had a blood pressure of 110/68mmHg, heart rate of 62 bpm, respiratory rate of 20rpm, and oxygen saturation of 100% on room air.

Physical Exam

- The patient was alert and oriented to self only. The physical examination of mouth and throat revealed no abnormalities or drooling.
- Abdominal exam revealed hypoactive bowel sounds diffusely with no associated tenderness on palpation. Blood work was unremarkable.

Imaging

- Computed tomography of abdomen and pelvis revealed a small fat-containing spigelian hernia and a small sliding-type hiatal hernia. A computed tomography of the chest with contrast also revealed small hiatal hernia with distention of esophagus with likely food residue (Figure 1) A follow up computed tomography with contrast of the neck revealed a significant amount of food material is noted in the esophagus which could be seen with slow transit.
- A follow up esophagogram (barium swallow) was conducted the next morning. The esophagogram revealed a diffuse or distal esophageal spasm (Figure 2).

Hospital Course

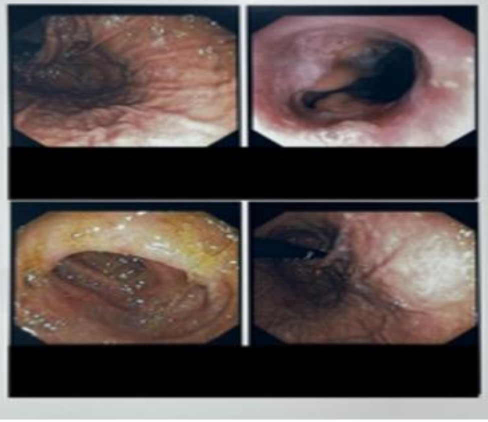
- The patient was admitted for possible food impaction and was prescribed ondansetron as needed for nausea. This patient was diagnosed with esophageal food impaction with hiatal hernia likely due to distal esophageal spasm. The patient was hemodynamically stable but was transferred to the intensive care unit for close monitoring and aspiration precautions were implemented.
- The gastroenterology team were consulted and EGD performed (Figure 3) The hospital course was uneventful.

Discussion

- This case illuminates the importance of management of hiatal hernia with distal esophageal spasm (DES). Treatment includes GERD management for hiatal hernia.
- Medical treatment in DES mostly targets symptomatic relief and often fails.
- Food impaction caused by hiatal hernia in concurrent DES is commonly managed by endoscopic intervention.

Figure

Figure 3: Still images from Esophagogastroduodenoscopy



Acknowledgements

Thank you to all the staff and faculty of Larkin Community Hospital.

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Over The Counter Medications: Education Needed

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[1] University of Florida College of Medicine, [2] University of Florida College of Medicine - Jacksonville, [3] University of Florida College of Pharmacy

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Idea

To implement an innovative approach to learning about over the counter (OTC) medications during the 3rd year family medicine clerkship.

Background

More than $40 billion being spent on OTC medications in the United States in 2022, and over 80% of adult patients utilizing OTC medications as first line treatment for minor ailments[1].

89% of medical students did not identify an overdose of acetaminophen during a standardized patient simulation at Johns Hopkins[2].

There is no current formal curriculum for OTC medications at the UFCOM.

Methods

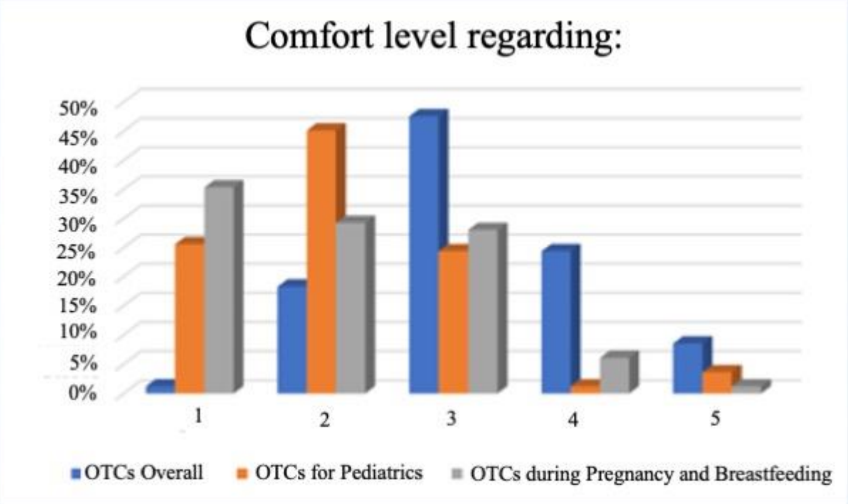
An anonymous electronic survey was sent to all third and fourth year students at UFCOM.

Discussion/ Conclusions

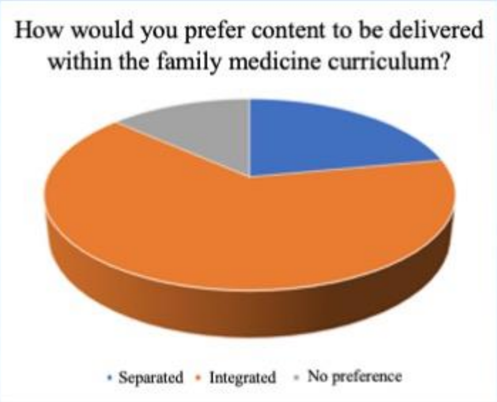
We anticipate that the OTC curriculum would benefit students and the patients they treat.

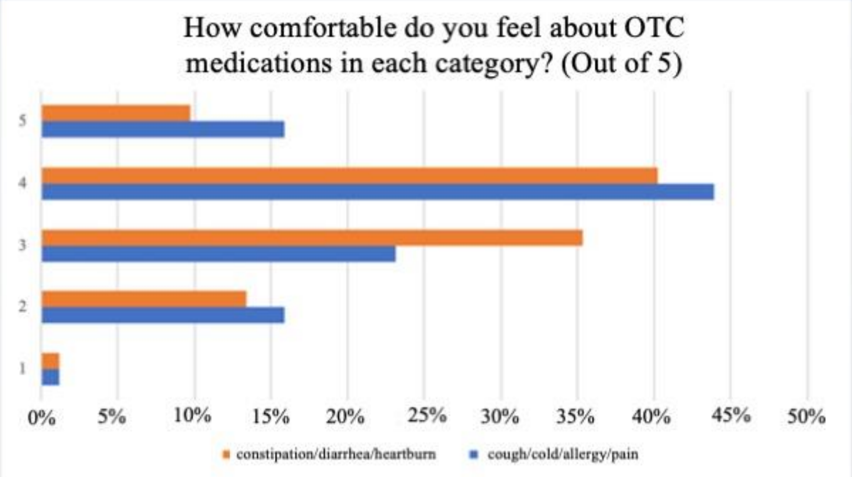
A variety of methods should be utilized for curriculum creation.

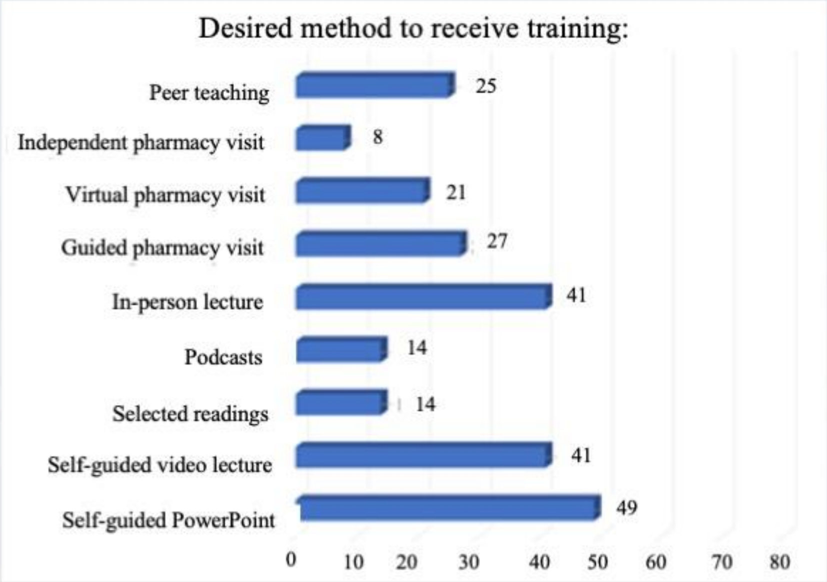
Results


Comfort level regarding:


Would you be interested in receiving more training in OTC medications?


How would you prefer content to be delivered within the family medicine curriculum?


How comfortable do you feel about OTC medications in each category? (Out of 5)


Desired method to receive training:

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FIU
Herbert Wertheim
College of Medicine

From Sea to Ear - Vibrio Alginolyticus in Florida's Coastal Waters: A Rare Case of Otitis Externa

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[2]Florida State University College of Medicine, Tallahassee, Florida

Introduction

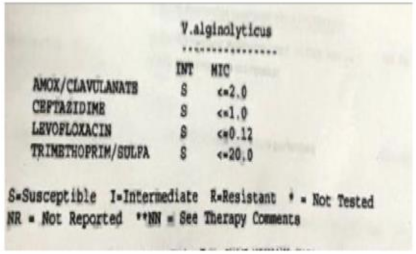
Vibrio Alginolyticus is a gram-negative marine bacteria discovered in 1968 that can cause eye, ear, and wound infections. Its high salt tolerance allows it to grow ubiquitously in many seawaters across the globe. The suspected pathogenesis is the strain exerts cytotoxic effects on keratinocytes and HEI-OC1 cells by inhibiting cell proliferation and migration and inducing apoptosis and cell death. There have been a few reports of *V. alginolyticus* causing otitis externa in patients with recent exposure to infested sea water, primarily limited to waters around Europe or the Mediterranean, in the warmer times of the year. With only 12 cases reported worldwide, there have only been 2 reported cases along the coastal shores of the United States and no reports of infections from sea waters along Florida. The epidemiological tendencies of this species should be further investigated.

Case Description

A 42-year-old male presents to the clinic with a 1-year history of seropurulent discharge from his left ear (Figure 1). He does not recall an inciting event but states that he often swims in the southeast Florida waters. He states that the drainage has been constant for the last year with moderate intensity. The patient has no additional modifying factors, denies any hearing loss, otalgia, tinnitus, vertigo, surgery, or trauma, and has not taken any medications.

Examination of the external ear canals and tympanic membrane reveals bloody and purulent discharge traversing the canal and dried blood covering the TM. Examination of the nasal cavity showed mucosal inflammation with no other abnormalities noted on physical exam. After a culture of the drainage was taken, Amoxicillin/clavulanate 125 mg was prescribed for 4 weeks. His culture grew *Vibrio Alginolyticus* and his otitis externa had resolved by the time of his three week follow-up.

Figure 1. Infected external ear canal



```
                     V.alginolyticus
                     ***************
                     INT  MIC
AMOX/CLAVULANATE      S    <=2.0
CEFTAZIDIME           S    <=1.0
LEVOFLOXACIN          S    <=0.12
TRIMETHOPRIM/SULFA    S    <=20.0

S=Susceptible  I=Intermediate  R=Resistant  * = Not Tested
NR = Not Reported  **NN = See Therapy Comments
```

Figure 2. Antibiotic sensitivity test

Figure 3. ***Vibrio Alginolyticus*** **Global Distribution for Otitis Externa**

Discussion

Similar to other halophilic marine *Vibrio* species, *V. alginolyticus* has been identified as pathogenic to humans, causing serious seafood poisoning or even extra-intestinal infections. There has been a recent uptick of otitis externa cases caused by *V. alginolyticus* in the Northern Hemisphere (Figure 2). These infections increase significantly during the summer due to the increased temperature of seawater. In addition, climate change over recent years has increased the abundance of these bacteria in both tropical and temperate waters. Thus it is likely that there will be an increase of otitis externa cases along the Florida coasts. The treatment strategy of choice for *V. alginolyticus* species is either a combination of a 3rd gen cephalosporin and tetracycline or a quinolone (Figure 3). Although our patient was treated empirically with penicillin and his infection resolved without any complications, conductive hearing loss and disease progression are fatal complications.

Conclusion

V. Alginolyticus is a rare cause of otitis externa in people who have recent exposure to temperate seawaters. Due to its sensitivity to traditional antibiotics, the true incidence and prevalence of the disease is unknown, especially in Florida. Recent climate change has caused warmer waters and facilitated v. alginolyticus species to cause infections in areas never before reported. Thus, physicians across the state of Florida should culture ear infections of patients with recent sea exposure to accurately diagnose this pathogen

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Mental Health Services at a Free Clinic: Pilot Responses to a Patient Survey

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INTRODUCTION

Mental health concerns are prevalent in free clinics. However, previous studies have shown that providers working in the safety net setting face many barriers to providing quality care; including lack of transparent work flow, difficulty addressing social determinants of health, and poor outside referral options. The objective of this study was to understand patient-reported barriers to mental health services at a South Florida free clinic.

METHODS

An electronic, iPad-based survey was distributed to adult patients at our free clinic from June 2023 to August 2023. The survey was available in English, Spanish, and Creole.

Patients were asked about their prior experiences with mental health services. Those who reported seeing a provider or going to the emergency room for mental health reasons within the last twelve months were asked additional questions regarding barriers to care.

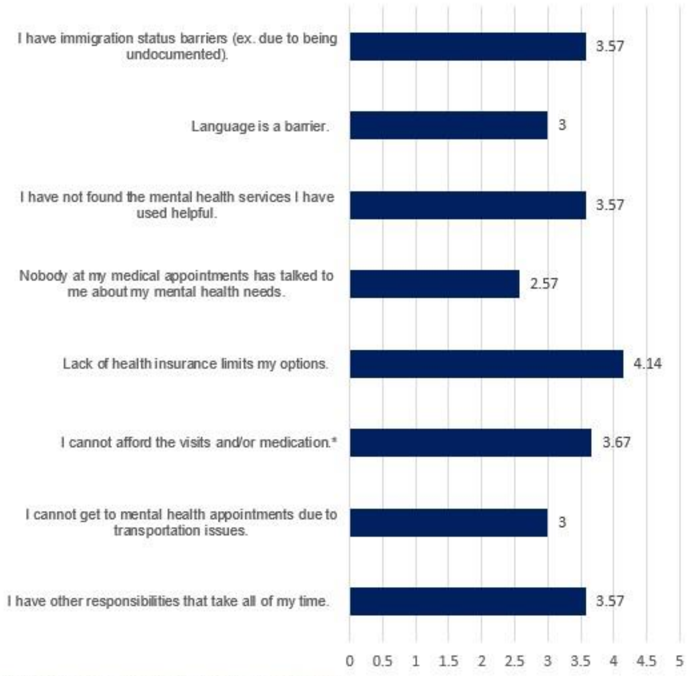
Descriptive statistics consisting of basic demographic data and Likert averages were tabulated (1-Strongly Disagree to 5-Strongly Agree).

RESULTS

Seventy-three patients consented to participate in the survey. Of those, seven endorsed utilization of mental health services in the past 12 months. These seven patients' responses to questions regarding access to and utilization of services were included in the final analysis.

The most strongly endorsed barrier to accessing mental health services was lack of health insurance (4.14/5). Other challenges included the financial burden of visits and/or medication (3.67/5), perceived usefulness of received mental health services (3.57/5), more time-consuming responsibilities (3.57/5), and immigration status (3.57/5).

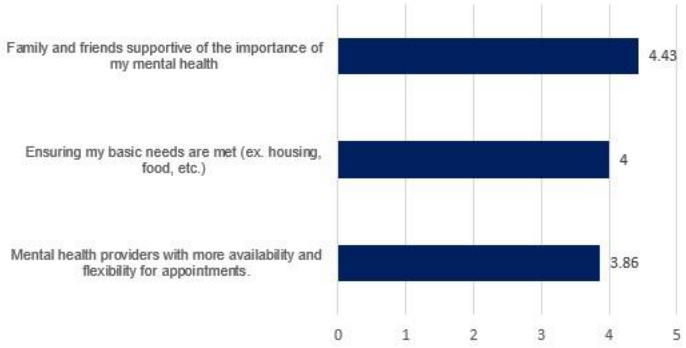
Factors influencing access to mental health services



*N=6 due to one participant leaving this question blank.

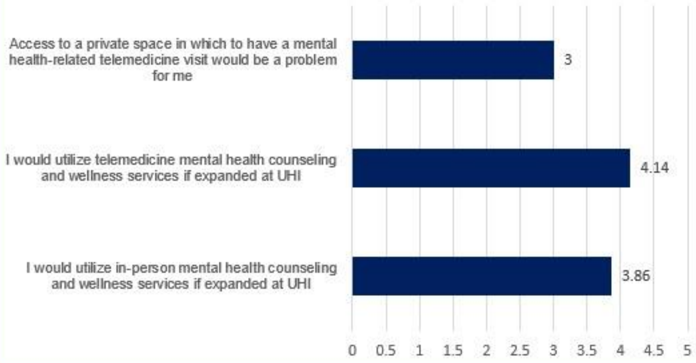
Support of family and friends for the significance of mental health was identified as the factor that would most influence the ease of accessing mental health services (4.43/5). This was followed by ensuring that basic needs such as housing and food were met (4.00/5), along with better availability and flexibility of mental health providers regarding scheduling (3.86/5).

Factors that would increase ease in accessing mental health services



Telehealth was reported to be the most desired visit type for mental health counseling and wellness (4.14/5) in comparison to in-person visits (3.86/5).

Opinions regarding telehealth services



CONCLUSIONS

Recognizing the specific challenges faced by patients is important in determining solutions to enhance utilization of mental health services in the free clinic setting. Lack of health insurance and financial burden of visits and/or medications may limit referral and treatment options. Patients felt that flexibility of scheduling and telehealth availability would help increase utilization of services. Although limited by a small sample, these responses support the hiring of an in-house social worker or licensed therapist to facilitate access to mental health services.

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ACKNOWLEDGEMENTS

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Unveiling the Diagnostic Enigma: A Case Report of a Rare Presentation of Adrenocortical Carcinoma

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Introduction

Adrenocortical Carcinoma (ACC) is a rare and aggressive malignancy arising from the adrenal cortex with a prevalence of approximately 0.06% [1-4]. Tumors greater than 4 cm increase the suspicion of carcinoma. Only 1-3% of all ACCs are less than 4 cm on initial imaging [3,5]. Hypertension and hypokalemia can be seen due to glucocorticoid-mediated mineralocorticoid receptor activation, mediated by high cortisol levels and high steroid precursors, including 17-hydroxyprogesterone (17-OHP) [6]. Although it can be difficult to distinguish between a benign adrenal lipid-poor adenoma and a malignant adrenocortical carcinoma from imaging, this case highlights how the combination of abnormally elevated steroid precursors, cortisol, ACTH, and androgens which were all suggestive of adrenal causes for the metabolic derangements in the presence of a lesion led us to suggest the diagnosis of ACC.

References

Case Presentation

We present the case of a 73 y/o female with PMHx of DM, HTN, CML, DVT, MDD, and Dementia who was brought due to AMS, hypotension and possible sepsis. The patient was AAO*0 and unable to follow commands. On admission vitals were BP 97/61, HR 93, RR 15, T 97.8. Labs showed Glu 231, Na 156, K 1.7, Cl 105, CO2 39, BUN 90, Cr 3.16, GFR 15, WBC 12.02, HGB 9.6, HCt 31.6.

An incidental finding of a round hypoattenuating 7.9-millimeter lesion of the left adrenal gland suggestive of a lipid-poor adenoma was reported. The patient's course was complicated by refractory hypokalemia despite KCL IV, Spironolactone, and K Citrate PO. On day 11 and onward, Potassium stabilized above 3.2. The patient also presented with SVT and MAT managed with metoprolol tartrate. She developed refractory hypertension managed with Losartan, Nifedipine, Amiloride, Labetalol PRN, and Hydralazine. The patient's cushingoid symptoms lead to the investigation of cortisol and ACTH levels. Plasma 17-OHP, Androstenedione, Testosterone, and Estradiol were elevated for a postmenopausal female - prompting us to obtain DHEA and DHEA-S to confirm adrenal origin.

Clinical Data: Lab Findings

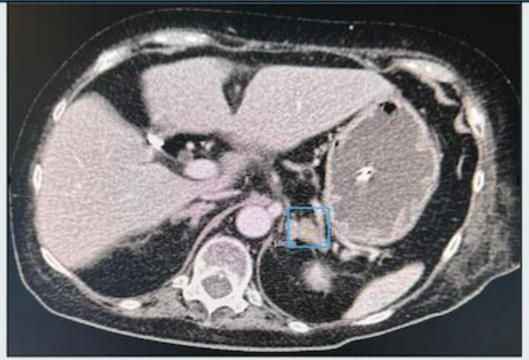
Table 1	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11
K (3.5-5.5)	1.7	2.7	2.5 3.2	2.6	3.9	2.1 2.7	3.9 3.1	1.9 2.1	1.9 2.6	2.9 2.9 3.4	3.2 3.4 4.4

Table 1: Serum Potassium levels

Table2		Day 7	Day 11	Day 15	Day 19
Serum:	RR: *				
17-OHP	<60	127	-		-
Androstenedione	20 - 75	271	-	-	-
Estradiol	0-30	-	57.5	-	-
Testosterone	15-70	-	155	-	-
DHEA	21 - 402	-	7.1	-	-
DHEA-sulfate	17 - 90	-	401	-	-
Metanephrine	0 - 62	-	-	-	11
Normetanephrine	0 - 145	-	-	-	69.4
HGH	0.0 - 10.0	-	-	0.1	-
IGF1	48 - 191	-	-	28	-
FSH		-	-	0.3	-
LH		-	-	0.3	-
Prolactin	3.0 - 18.6	-	-	14.4	-

Table 2: Serum hormone levels

Imaging



CT Abd: adrenal lesion to be lipid-poor or malignant: 1.17cm x 1.58cm, 18 HU, and 75% relative washout

Discussion

In suspected ACC, a diagnostic evaluation is recommended to exclude pheochromocytoma, hyperaldosteronism, hyperandrogenism, and Cushing's syndrome [1,4,7]. In our case, plasma Aldosterone: Renin Ratio (ARR) was < 1 ruling out PA [8]. The mineralocorticoid excess was likely responsible for the aldosterone suppression [1]. The metanephrines were within normal limits ruling out pheochromocytoma. The patient demonstrated cortisol excess with levels of 91.3,115, 44.6, and 44.1. The DST was performed suggesting ACTH-dependent Cushing Syndrome from an ectopic source. Imaging of the pituitary, chest, abdomen, and pelvis was performed to localize the source. The brain MRI demonstrated no lesions and the absence of masses in the pituitary. Lastly, we were able to exclude metastasis from CML due to a lack of lesions elsewhere. In conclusion, the combination of elevated steroid precursors, cortisol, ACTH, and androgens with elevated DHEAS in the presence of a lesion suggests ACC.

Uncommon Journey: Uterine Adenocarcinoma Metastasis to the Left Foot Post-Hysterectomy – A Case Report

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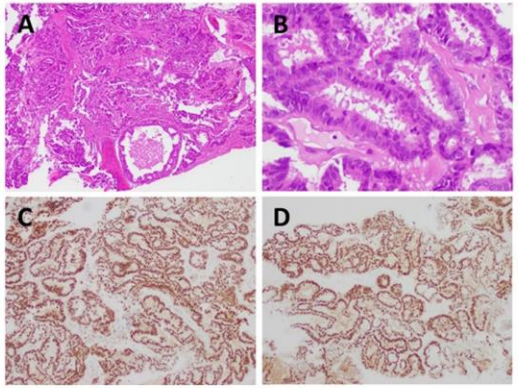
Introduction

- Cancer of the uterine corpus is the most common gynecological cancer among women in the United States with endometrial adenocarcinoma (EC) being the most common type
- Locally confined disease carries a much better prognosis with a 96% 5- survival rate compared with the 20% 5-year survival rate of distant metastatic disease
- Metastasis occurs either through direct invasion, lymphatic, or hematogenous pathways, typically affecting more proximal regions such as the ovaries and para-aortic and/or pelvic lymph nodes initially
- Osseous metastases of EC are extremely rare, ranging from 4% to 7%, and are typically confined to the axial skeleton, such as the thoracic and lumbar vertebra, the sacrum, sternum, and ribs

Case Presentation

This is a case of a 60-year-old female with a history of endometrial adenocarcinoma status post-hysterectomy and radiation therapy performed in 2014, who presented with a left ankle mass 4 years after EC treatment. Patient states that the left ankle mass first appeared in June of 2017. An MRI of the left ankle was ordered and demonstrated an infiltrative mass centered along the medial aspect of the flexor hallucis longus tendon sheath in the posterior medial aspect of the tibiotalar joint. There was also concurrent erosion of the medial and posterior aspect of the talus suggesting a tenosynovial giant cell tumor. Biopsy of this lesion with subsequent pathology showed metastatic endometrial adenocarcinoma. The patient then received radiation to her left ankle with a subsequent MRI demonstrating a decrease in size of the left ankle mass. Follow-up MRI performed 3 years later demonstrated local progression of her metastasis and, as a result, the patient elected to undergo below-knee amputation of the left lower extremity.



A. Low power view shows a malignant epithelial proliferation infiltrating preexisting bone and soft tissue. B. High power view shows confluent glandular structures lined by cells with nuclear enlargement and hyperchromasia. Frequent mitotic figures are present. C-D. Immunohistochemistry performed shows the tumor cells are diffusely positive for PAX8 and ER, respectively.

Frequent Sites of	EC Metastasis
Pelvic/para-aortic lymph nodes	60-70%
Peritoneal Cavity	30-40%
Lungs	10-20%
Liver	5-15%
Bone	5-10%

Discussion

- Recurrence is not uncommon in patients treated for EC, typically occurring within 3 years in about 20% of all patients. Of these, 50% of recurrences occur locally, 25% occur distally, and 25% of metastases carry characteristics of both .
- Amongst distal metastases, few are osseus and even less are metastatic to the feet. The location, extent of invasion, and type of cancer can indicate prognostic factors and help guide potential treatment options.
- Treatment options for bony metastases typically include chemotherapy, radiation, surgery, or a combination of the three. .
- Surgical management included amputation of the digit/appendage affected or local resection of the metastasis itself
- Due to limited available cases in the literature, there is unreliable evidence to support whether surgery is the most appropriate treatment for EC metastasis, let alone identify an ideal surgical procedure such as amputation vs local debulking.

Conclusion

- Pedal osseous metastasis of EC is a very rare finding and there is no centralized treatment plan of bony metastases as they relate to EC.
- More cases and their outcomes should be reported in the literature to raise awareness of an otherwise unexplained and painful foot mass representing metastatic disease.
- Increased reporting will also help guide physicians with an evidence-based and optimal treatment plan when faced with a bony metastasis arising from EC.

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Assessing the Comorbidity Burden in Patients with Cancer at UFHealth

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Background

- With the advent of new treatment strategies, cancer mortality in the US is steadily on the decline. Paradoxically, there is an increase in the incidence of cancer, especially in younger populations (1)
- Both these trends lend themselves to a growing population of patients who have cancer or who are cancer survivors
- Studies show that patients with cancer and cancer survivors often have a high complexity of needs, require significant coordination of care, and deal with a high burden of comorbidities (2, 3)
- To keep up with the growing demand, primary care physicians will increasingly be expected to manage the comorbidities of cancer survivors(4)

Objective

- To assess the comorbidity burden in the population of cancer patients compared to the general population in the UFHealth system

Methods

- Aggregated health data from adults (>18 years of age) in the UFHealth system in Gainesville, FL (from June 2011 to December 2023) was pulled using the University of Florida (UF) Integrated Data (IDR) i2b2 database
  - History of cancer diagnosis defined as >= 2 ICD-9 or 10 diagnoses for any cancer throughout the course of their care at UFHealth
  - Only patients with > 1 visit at an outpatient practice were included
- The statistical software R (version 4.3.2) was used to perform Pearson Chi-square test to assess for associations.
- Tests with P ≤ 0.05 were considered significant

Results

Table 1: Demographics

	Without Cancer Hx (n=479906)	With Cancer Hx (n=172684)
Age ≥ 65	131916 (27%)	87402 (51%)
Male Sex	208820 (44%)	74948 (43%)
Race		
White	340146 (71%)	128354 (74%)
Black	59480 (12%)	19122 (11%)
Asian	18232 (4%)	2846 (2%)

Figure 1: Coordination of Cancer Survivorship Care (5, Adapted from Stout and Nekhlyudov)

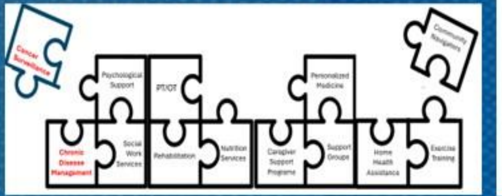

Table 2: Prevalence of Comorbidities in Patients with and without a History of Cancer

	With Cancer Hx	Without Cancer Hx	Absolute Difference	Odds Ratio	Confidence Interval
Obesity	19.2%	15.6%	3.6%	1.28	1.26-1.30
Asthma	11.7%	8.5%	3.2%	1.43	1.41-1.46
Depression	22.4%	15.3%	7.1%	1.60	1.58-1.62
Stress Disorder (e.g. PTSD, adjustment disorder)	8.1%	4.7%	3.4%	1.80	1.77-1.85
Chronic pain and back pain	48.6%	31.1%	17.4%	2.09	2.07-2.11
Hyperthyroidism and related	1.8%	0.9%	1.0%	2.16	2.06-2.26
Type 2 diabetes	19.2%	9.7%	9.6%	2.22	2.19-2.26
Heart failure	10.1%	4.7%	5.4%	2.29	2.24-2.34
Urinary tract infection	14.0%	6.4%	7.6%	2.39	2.35-2.44
Hypothyroidism and related	14.7%	5.3%	9.4%	2.50	2.45-2.54
Chronic kidney disease, ESRD	12.8%	5.5%	7.2%	2.50	2.45-2.55
CAD and other ischemic disease	18.8%	8.1%	10.7%	2.62	2.58-2.67
Fatigue	29.4%	13.3%	16.1%	2.71	2.67-2.74
Hypertension	46.3%	23.3%	23.0%	2.84	2.81-2.88
Upper GI disease	35.3%	15.7%	19.6%	2.92	2.88-2.96
Anemia	12.7%	4.6%	8.1%	3.04	2.98-3.10
COPD and other chronic lower respiratory diseases	11.5%	4.1%	7.4%	3.06	2.99-3.12
Chronic liver disease or cirrhosis	5.8%	1.9%	3.9%	3.26	3.17-3.36
Anxiety	26.2%	1.8%	24.4%	19.47	19.02-19.96

Summary/Conclusions

- With such a high comorbidity burden in these patients, primary care physicians will have an increasing role in helping to manage this growing population of patients with cancer
- While primary care physicians are well-acquainted with managing conditions such as anxiety, hypertension, and diabetes, managing these conditions in the context of oncological treatments and the sequalae from these treatments may require additional considerations
- Continuing education will be needed to help fill this gap as well as increasing care coordination between oncology and primary care physicians (6,7)

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A case of vestibular dysfunction post dental cleaning with ultrasonic descaler

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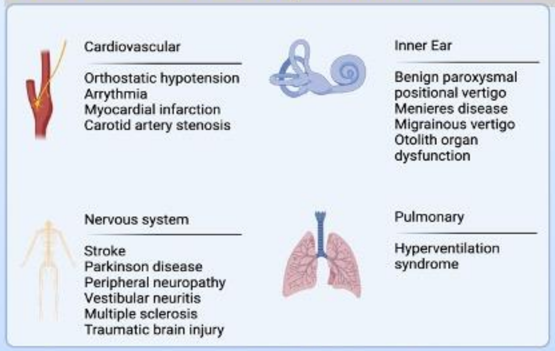
♦ Introduction

Vestibular dysfunction poses significant challenges to individuals' daily functioning, impacting their balance, spatial orientation, and overall quality of life. Dizziness is estimated to account for 5% of primary care visits and is a common chief complaint resulting in ENT or neurology referral[3]. Otologic and vestibular dysfunction are the leading causes of dizziness[3]. The initial evaluation of dizziness involves distinguishing peripheral from central causes as well as between true vertigo, disequilibrium, presyncope, and lightheadedness. Patients with BPPV will have episodic positional vertigo, while vestibular neuritis will present with horizontal nystagmus and abnormal gait. Meniere's disease classically presents with hearing loss, tinnitus, and horizontal nystagmus[5].

The current first line treatment for vestibular dysfunction is vestibular therapy. Pharmaceuticals may improve symptoms, however they are not currently recommended for routine use and may impair CNS compensation[5].

Recent improvements in vestibular testing now allow the semicircular canals, utricle, and saccule to be evaluated independently surfacing new patterns of presentation[1]. To our knowledge there is only one other case of isolated saccular dysfunction reported in the literature, however with new advancements in vestibular testing this may increase[7]. There is also mention in the literature of the possibility of inner ear damage secondary to ultrasonic descalers, however none have been reported to date[2,6]. Here we present a case of new onset vertigo immediately following a dental cleaning with ultrasonic descaler and subsequent findings of left unilateral saccular dysfunction.

♦ Differentials for complaint of dizziness



Cardiovascular
- Orthostatic hypotension
- Arrythmia
- Myocardial infarction
- Carotid artery stenosis

Inner Ear
- Benign paroxysmal positional vertigo
- Menieres disease
- Migrainous vertigo
- Otolith organ dysfunction

Nervous system
- Stroke
- Parkinson disease
- Peripheral neuropathy
- Vestibular neuritis
- Multiple sclerosis
- Traumatic brain injury

Pulmonary
- Hyperventilation syndrome

Figure 1. Etiologies of dizziness. Created with BioRender.com

♦ Case Presentation

This is a case report of a 42-year-old female presenting to the family medicine clinic with history of multiple head injuries who developed new sudden onset vertigo, nausea, and vomiting immediately following a dental cleaning with ultrasonic descaler. Her symptoms improved, however reproducible positional dizziness persisted. She complains of dizziness with right cervical rotation while supine as well as right side bending even when her eyes are closed. The patient complains of intermittent tinnitus but denies hearing loss, headache, and neck pain.

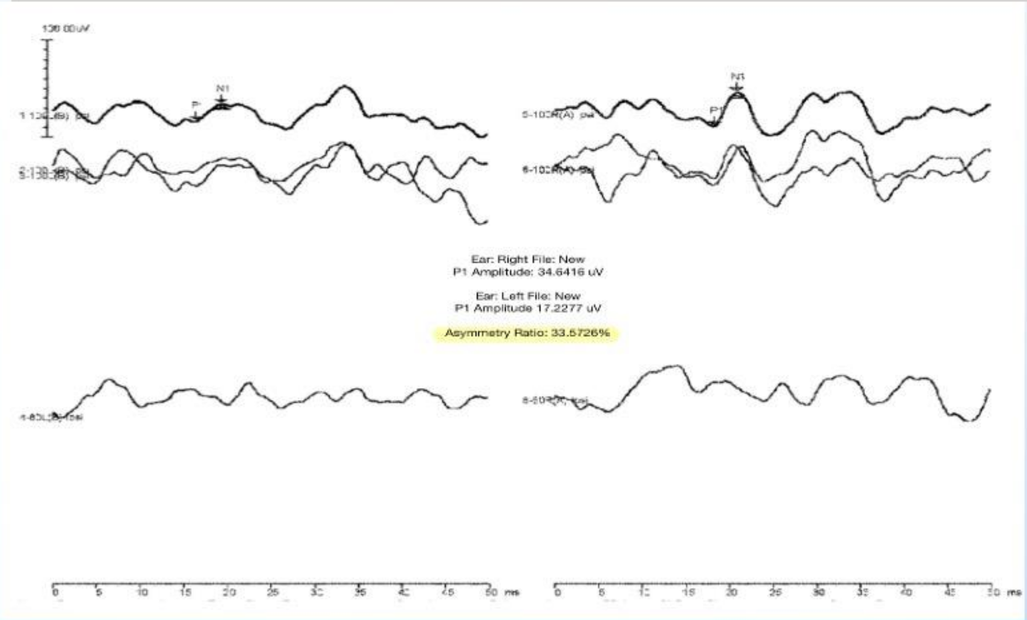
PMHx: MVA (2000), migraines, head injury (2008, 2022), post concussive syndrome (2022), Hashimoto's (2009), COVID (2020, 2022)

Neuro exam: A&Ox4, speech clear and fluent, memory intact. CN VIII: Mild end gaze nystagmus on right gaze, suspect loss of fixation. No vertical nystagmus. CN otherwise grossly intact. Motor: 5/5 strength all extremities, no pronator drift. Coordination: rapid alternating movement intact, no extraneous movements. Gait: can stand in tandem with eyes closed for 5 seconds before some development of sway to the right.

Vestibular testing: Cervical vestibular evoked myogenic potentials (c-VEMP) revealed a significant leftward asymmetry of 33.57% (left reduced response), indicating a clinically significant dysfunction of the left saccule pathway without auditory abnormality. Traditional characteristics of BPPV (latency, adaptation, fatigue) were not seen. Videonystagmography revealed significant vertical nystagmus in the static positional tests.

Imaging: Brain MRI/internal auditory canal without contrast was negative. Cervical MRI without contrast showed C5-6 disc bulging and spondylosis causing mild right neural foraminal stenosis with a shallow left paracentral disc herniation indenting the thecal sac.

♦ Vestibular Evoked Myogenic Potentials



Ear: Right File: New
P1 Amplitude: 34.6416 uV

Ear: Left File: New
P1 Amplitude 17.2277 uV

Asymmetry Ratio: 33.5726%

Figure 2. Cervical vestibular evoked myogenic potentials reveals a significant leftward asymmetry, indicative of unilateral uncompensated left saccule dysfunction.

♦ Discussion

The patient was seen by otolaryngology who gave the diagnosis of labyrinth dysfunction and did not believe this was BPPV. They recommended continued vestibular therapy for treatment. She was also seen by Neurology who agreed with the diagnosis and the recommendation for continued vestibular rehabilitation. Orthopedics did not believe her symptoms were cervicogenic in nature and ophthalmology reported an unremarkable exam. The patient is currently undergoing vestibular therapy and reports mild improvement in symptoms however continues to experience headaches, nausea, and dizziness during therapy.

While the symptoms onset immediately following ultrasonic descaling, caution should be taken in assigning causation. Treatment options for acute symptoms include anticholinergics, antihistamines, and benzodiazepines however current recommendations advise discontinuing upon resolution of symptoms[5]. Fortunately, the vestibular system has robust neuroplasticity, and many patients can be trained back to a good level of function with vestibular rehabilitation therapy[4].

♦ Conclusion

To our knowledge there is only one other case report in the literature of isolated saccular dysfunction. Here we report a unique presentation of isolated saccular dysfunction, adding to patterns of presentation which were once unable to be characterized. Further research is needed to evaluate isolated otolith dysfunction to optimize treatment and predict disease course.

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The patient provided informed consent for this research and presentation.

SURVEY BASED MOTIVATIONAL INTERVIEWING FOR SMOKING CESSATION: COMMUNITY QUALITY IMPROVEMENT PROJECT

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Halifax Health, Daytona Beach, FL

Background

- Cigarette smoking is a leading cause of preventable disability and death with an average of 480,000 deaths per year in the United States and 32,000 deaths per year in Florida alone (8). While there has been a decrease in cigarette smoking in recent years nationwide, this problem continues to persist, especially in populations that already suffer from health disparities (1).
- Motivational interviewing has demonstrated promise in efforts to reduce smoking (2). This tool focuses on the individual's personal interests in quitting smoking. Open-ended questions encourage the patient to consider their own health goals and to determine how smoking impacts their lives. This method had better success when compared to nicotine patch therapy and medication assisted therapy with cessation rates of 55.6%, 47.6%, and 33.3%, respectively (2,4).
- Several studies indicate that the motivational interviewing technique is not as commonly used when discussing smoking cessation during office visits (3). Compared to typical anti-smoking advice, motivational interviewing was 5.2 times more effective at aiding adults quit smoking (7).
- Through this study, we aim to see how a motivational interview-inspired survey can impact a patient's stage of change in quitting smoking defined by their place on the readiness to change model (9). Our goal is not to replace motivational interviewing but to create a form that inspires reflection and consideration of smoking cessation without significantly affecting the timing of appointments.

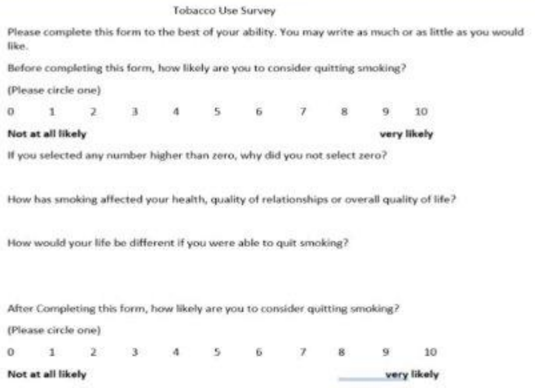
Methods

- Followed the quality improvement model of Plan, Do, Study, Act
- Researched methods that increased smoking cessation outcomes
- Created a survey based on motivational interviewing questions and included a scale at the beginning and end of the survey to measure a participant's phase of willingness to change
- Distributed forms to patients who were active smokers at one of two local family medicine clinics, along with other intake forms
- Completed forms collected by the front desk staff prior to being seen by the physician
- Analyzed the results of the surveys that were collected over twenty weeks
- No compensation or incentives were given to patients for completing the form, and participation was optional

Stages of Change Model

Adapted from Ruff Institute of Global Homelessness

Survey



Tobacco Use Survey

Please complete this form to the best of your ability. You may write as much or as little as you would like.

Before completing this form, how likely are you to consider quitting smoking?

(Please circle one)

0 1 2 3 4 5 6 7 8 9 10

Not at all likely **very likely**

If you selected any number higher than zero, why did you not select zero?

How has smoking affected your health, quality of relationships or overall quality of life?

How would your life be different if you were able to quit smoking?

After Completing this form, how likely are you to consider quitting smoking?

(Please circle one)

0 1 2 3 4 5 6 7 8 9 10

Not at all likely **very likely**

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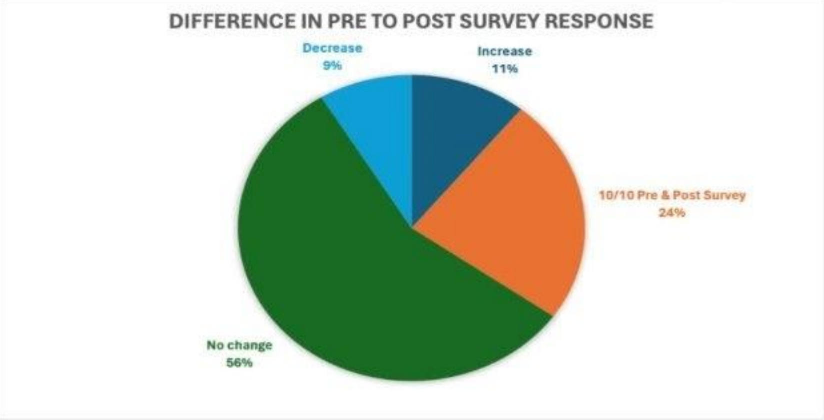
Results

- In total, 42 forms were collected in this study.
- 5 (11.9%) patients indicated an increase in likelihood of considering quitting smoking.
- 11 (26.2%) patients indicated on the forms that they were already at a 10/10 likelihood of considering quitting smoking before completing the remainder of the questionnaire.
- 4 (9.5%) patients indicated a decrease in likelihood of contemplating quitting smoking after completing the questionnaire.
- Common responses for how one's life could be different after quitting smoking included saving money and better health (14 responses).



Conclusions & Future Directions

- A motivational interviewing inspired survey form may be an effective form of increasing readiness to change in some patients.
- Limitations in our study design is lack of a pre-survey conversation to gauge where a patient is on the Readiness to Change Model.
- Our form did collect vital information such as patient values, current impacts of smoking on their lives, and recent thoughts on cessation.
- While the form alone may not be impactful enough to replace motivational interviewing, it can be a useful adjunct for aiding patients in quitting smoking.

Assessing Specialty Utilization at KNIGHTS Clinic

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College of Medicine, University of Central Florida

Background

The Keeping Neighbors in Good Health Through Service (KNIGHTS) Clinic is a student-run, free clinic held at Grace Medical Home (GMH). GMH is a nonprofit medical home located in downtown Orlando, Florida that provides **care to low-income, uninsured patients in the Central Florida area**.These patients **earn at least 200% below the federal poverty level.**

According to the Florida Department of Health, there were **174,662 uninsured residents** of Orange County, where Grace Medical Home is located.[1] Uninsured patients frequently face difficulty in accessing care from specialists and the procedures they offer.[2]

The **specialties offered by KNIGHTS Clinic** include audiology, cardiology, dermatology, otorhinolaryngology (ENT), hematology, infectious disease, neurology, nutrition, oncology, primary care, psychiatry, pulmonology, and urology.

Objective

This quality assurance project aims to **evaluate which specialties are most commonly used** by KNIGHTS Clinic patients and to obtain patient feedback regarding the benefits of offering specialty care.

Additionally, this project aims to collect data related to **medication dispensing and procedures performed** on patients utilizing these services to inform fundraising efforts and recruitment of providers.

Methods

The subjects in this study include both established and new patients of the KNIGHTS Clinic.

Using clinic schedules from January 2021-February 2024, we conducted a retrospective analysis on the specialties that patients had used during this 3-year period.

Additionally during clinics held from December 2023-February 2024, **subjects were asked to complete a survey** on the Qualtrics online survey platform that was offered in three languages: English, Spanish, and Portuguese. The survey included questions assessing specialty utilization and medication dispensing. We obtained a total of **n=10 survey responses.**

Results

Figure 1: Number of Patients Seen by Each Speciality Offered at the KNIGHTS Clinic from January 2021 - February 2024

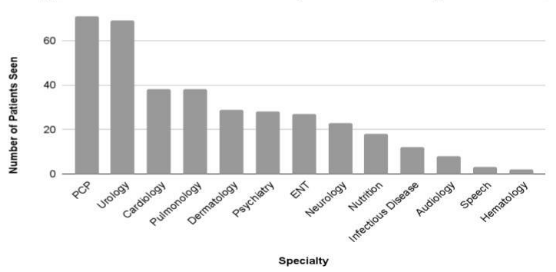


Figure 2: Specialties Requested by Patients to be Offered at the KNIGHTS Clinic

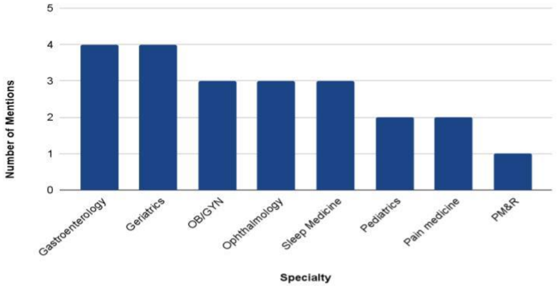


Figure 3: Patients Who Returned for Medications and Procedures

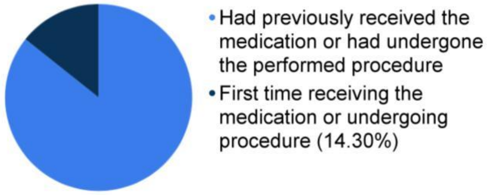
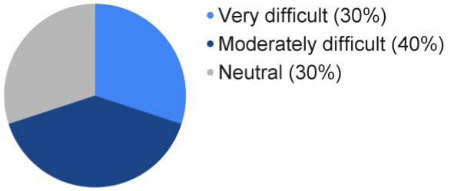


Figure 4: Patient Responses to Difficulty in Receiving Specialty Care



Discussion

No patients reported these specialty services to be moderately easy or very easy to obtain outside of KNIGHTS Clinic (Figure 4). Patients also expressed their gratitude. One patient wrote in their free text response: *"[My visit was]* ***very helpful. Thank you for everything you do for the community."*** In turn, we are reassured of our ability to care for the community and plan to continue to offer these services.

Considering that most **(6 out of 7)** patients received their medication or had undergone the procedure performed previously, we believe patients return to our clinic for these services. In regards to the one patient who had not received the medication nor undergone the procedure before, **we believe this instance serves as a testament to the fact that we provide care for patients that they may not have experienced before. We plan to expand these services for our patients and** plan to utilize this data to improve our care for the community by way of **recruitment of these specialists to the KNIGHTS Clinic.**

Limitations & Future Directions

Limitations of this study include **lack of generalizability due to sample size** and **inability to track where patients may have received their medications or procedures** in the past. Future directions for this project could include an updated survey to ask patients where else they may receive this care outside of the KNIGHTS Clinic.

Acknowledgements

We would like to thank Dr. Scott Wiltz and Dr. Magdalena Pasarica for their time, mentorship, and direction as our faculty advisors, as well as the UCF College of Medicine, Diebel Legacy Fund, and Grace Medical Home,

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Assessing the impact of COVID-19 on the Social Determinants of Health in Volusia County

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Introduction

Social determinant of health contributes to wide health disparities and inequities. The specific unmet health-related social needs (HRSN) such as food insecurity, lack of transportation, and homelessness have been associated with adverse health conditions, poor medication adherence, frequent emergency department visits, and hospitalizations. Identifying and addressing patients' unmet social needs has increasingly become the focus of many health system efforts.

Objectives

This study seeks to identify the specific unmet health-related social needs among primary care patients in Volusia County, FL and examined whether these unmet social needs differed between pre-COVID and post-COVID periods in order to develop interventions aimed at addressing social determinants of health and connecting patients with appropriate community resources.

Methods

- Data was extrapolated from Social Needs Screening forms that were given to patients in the primary care setting at Halifax Health.
- Total pre-COVID patients: 220
- Total post-COVID patients: 112
- Total patients: 332
- The frequencies of the most common health-related disparities were then collected and compared between pre-COVID patients and post-COVID patients.
- Statistical analysis using Fisher's exact test was used to calculate p-values.

Results

Insecurities	Pre-COVID %	Post-COVID %	p-value
Food Insecurity	14.3	16.96	0.5222
Financial Insecurity	36.3	22.3	0.0093*
Transportation Insecurity	5.9	7.14	0.6425
Living insecurity	4.1	9.0	0.0818

Table 1. SDoH insecurities in the Halifax Health residency clinic comparing Pre COVID and Post COVID patients.

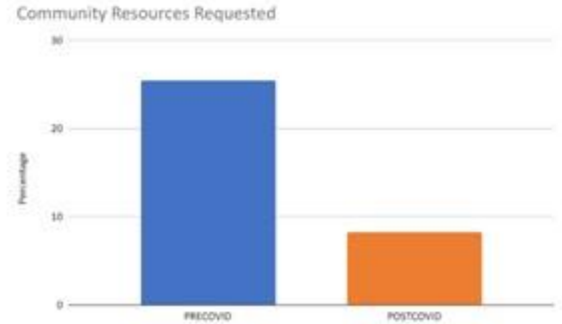

Figure 1. Community resources requested from Halifax Health residency clinic patients comparing Pre COVID and Post COVID patients.

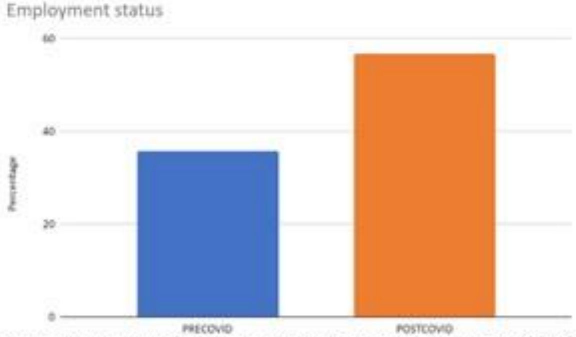

Figure 2. The employment status of Halifax Health residency clinic patients comparing Pre COVID and Post COVID patients.

Conclusion

There was a significant statistical difference in the frequency of financial insecurity that pre-COVID patients experienced compared to post-COVID patients. The frequency of pre-COVID patients that requested for community resources was higher than the post-COVID patients that requested for community resources. Financial insecurity was the most frequent insecurity for both pre-COVID and post-COVID patients in this study. Food insecurity and transportation insecurity increased after the pandemic ended but was not statistically significant.

Discussion

In this study, we found that post-COVID patients reported less financial insecurity and need for community resources than pre-COVID patients in Volusia County. Policy changes and healthcare reforms may have improved affordability and access to healthcare requiring less requests for community resources. Increased awareness and initiatives in the community may have accelerated the support for at risk patients. Another reason from the study itself, was the fact that the post-COVID screening form had an additional six questions that were added with three in the back, which many patients did not answer. Having two sheets of paper for the updated screening forms will promote full completion of screening forms. Connecting patients with more community resources is important and may help mitigate food, financial, and transportation insecurities which are important social determinants of health. Future studies may look at whether adding another sheet of paper in the screening form will increase completion rates and connect more patients in need to appropriate community resources. In addition, more studies may need to be done to elucidate the reasons why financial insecurity may have lessened after the pandemic.

References

1. [illegible]
2. [illegible]
3. [illegible]
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9. [illegible]

Performance of Language Models on the Family Medicine In-training Exam

Rana E Hanna, B.S ; Logan R Smith, B.A; Rahul Mhaskar, PhD; Karim Hanna, MD

USF Health
UNIVERSITY of SOUTH FLORIDA

INTRODUCTION:

- ChatGPT3.5 scored at or near the passing threshold (60%) for all three United States Medical Licensing Exams (USMLE).
- ChatGPT 4.0, has been shown to outperform ChatGPT 3.5 and other large language models (LLMs) on most exams taken.

AIM

This study aims to determine if AI can be a reliable study tool for family medicine residents studying for their board exams using In Training Exams (ITE).Further, this study aims to determine which LLM is more reliable and can be used to the advantage of residents: ChatGPT3.5, ChatGPT4.0, or Bard.

METHODS

- 193 multiple choice questions of the 2022 ITE were inputted in ChatGPT3.5, ChatGPT4.0, and Bard.
- The LLMs performance was then scored and scaled.
- Chi-squared analysis performance of ChatGPT3.5, ChatGPT4.0, and Bard and the question categories
- The agreement across responses from ChatGPT3.5, ChatGPT4.0, and Bard was investigated via the Kappa coefficient (*K*) (95% CIs). The strength of agreement was interpreted using the following scale

Table 1: Cohen's kappa (*K*) Interpretation

Value of *K*	**Strength of agreement**
< 0.20	Poor
0.21 - 0.40	Fair
0.41 - 0.60	Moderate
0.61 - 0.80	Good
0.81 - 1.00	Very good

RESULTS

Figure 1: Overall Performance on the ITE

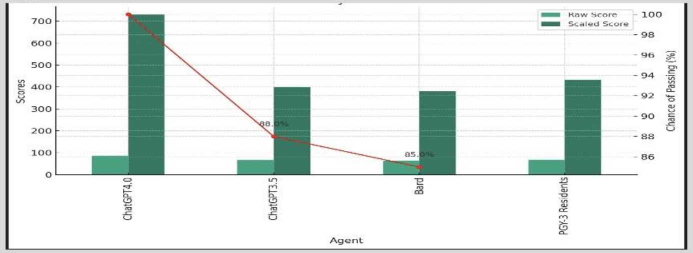


Figure 1: Graph portraying the raw score (light green), scaled score (dark green) and Bayesian score predictor of probably of passing the board exams (red line) of each LLM compared to the PGY-3 national average.

Figure 2: Categorical Performance of ChatGPT3.5, ChatGPT4.0 and Bard

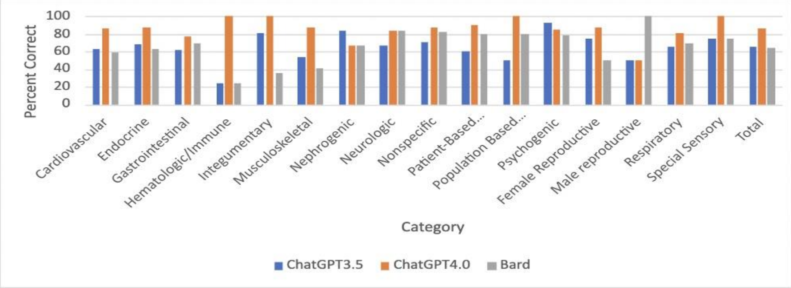
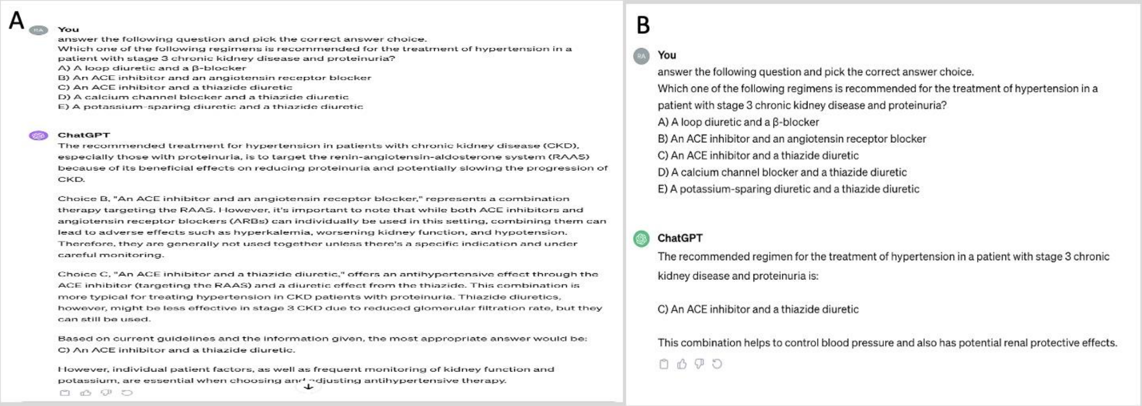


Figure 2: Histogram portraying the performance of ChatGPT3.5 (blue), ChatGPT4.0 (orange), and Bard (gray) on the 2022 family medicine in-training exam overall and per category. Except for the male reproductive and neurologic categories, Bard consistently scored below ChatGPT3.5 or ChatGPT4.0. The chi-squared analysis demonstrated no significant improvement in performance by topic for ChatGPT3.5, ChatGPT4.0, or Bard

Figure 3. Examples of Responses For ChatGPT4.0, Bard and ChatGPT3.5


A

You

answer the following question and pick the correct answer choice.
Which one of the following regimens is recommended for the treatment of hypertension in a patient with stage 3 chronic kidney disease and proteinuria?
A) A loop diuretic and a β-blocker
B) An ACE inhibitor and an angiotensin receptor blocker
C) An ACE inhibitor and a thiazide diuretic
D) A calcium channel blocker and a thiazide diuretic
E) A potassium-sparing diuretic and a thiazide diuretic

ChatGPT

The recommended treatment for hypertension in patients with chronic kidney disease (CKD), especially those with proteinuria, is to target the renin-angiotensin-aldosterone system (RAAS) because of its beneficial effects on reducing proteinuria and potentially slowing the progression of CKD.

Choice B, "An ACE inhibitor and an angiotensin receptor blocker," represents a combination therapy targeting the RAAS. However, it's important to note that while both ACE inhibitors and angiotensin receptor blockers (ARBs) can individually be used in this setting, combining them can lead to adverse effects such as hyperkalemia, worsening kidney function, and hypotension. Therefore, they are generally not used together unless there's a specific indication and under careful monitoring.

Choice C, "An ACE inhibitor and a thiazide diuretic," offers an antihypertensive effect through the ACE inhibitor (targeting the RAAS) and a diuretic effect from the thiazide. This combination is more typical for treating hypertension in CKD patients with proteinuria. Thiazide diuretics, however, might be less effective in stage 3 CKD due to reduced glomerular filtration rate, but they can still be used.

Based on current guidelines and the information given, the most appropriate answer would be:
C) An ACE inhibitor and a thiazide diuretic.

However, individual patient factors, as well as frequent monitoring of kidney function and potassium, are essential when choosing and adjusting antihypertensive therapy.

B

You

answer the following question and pick the correct answer choice.
Which one of the following regimens is recommended for the treatment of hypertension in a patient with stage 3 chronic kidney disease and proteinuria?
A) A loop diuretic and a β-blocker
B) An ACE inhibitor and an angiotensin receptor blocker
C) An ACE inhibitor and a thiazide diuretic
D) A calcium channel blocker and a thiazide diuretic
E) A potassium-sparing diuretic and a thiazide diuretic

ChatGPT

The recommended regimen for the treatment of hypertension in a patient with stage 3 chronic kidney disease and proteinuria is:

C) An ACE inhibitor and a thiazide diuretic

This combination helps to control blood pressure and also has potential renal protective effects.

Figure 3: Screenshots of responses of the three LLMs to capture the difference in the quality of answers and explanations between ChatGPT4.0 (A) and ChatGPT3.5 (B) to the same multiple choice question about hypertension treatment in a patient with chronic kidney disease. **A.** ChatGPT4.0 gives background information on targeting the renin-angiotensin-aldosterone system in managing hypertension. Not only did ChatGPT4.0 clearly explain why it chose the correct answer (ACE inhibitor and Thiazide), but it goes on to explain why the other options are incorrect. **B.** On the other hand, ChatGPT3.5 provides no contextual information on the underlying mechanisms of hypertension and why other answers are incorrect

Table 2: Inter-rater Agreements and Inter-rater Agreements for Incorrect Answer Choices for ChatGPT3.5, ChatGPT4.0, and Bard

		Bard and ChatGPT3.5	**Bard and ChatGPT4.0**	**ChatGPT3.5 and ChatGPT4.0**
Agreement: Overall Performance	**Weighted *K***	0.383	0.280	0.360
	95% Confidence Interval	0.247-0.519	0.153-0.407	0.229-0.491
Agreement: Incorrect Answer Choice	**Weighted *K***	0.400	0.689	0.649
	95% Confidence Interval	0.150-0.650	0.435-0.943	0.389-0.910

Table 2: Inter-rater agreements between Bard and ChatGPT3.5, Bard and ChatGPT4.0, and ChatGPT3.5 and ChatGPT4.0. ChatGPT3.5 and Bard had the highest inter-rater agreements indicating a "fair-to-moderate" agreement. ChatGPT4.0 and Bard had the lowest inter-rater agreement. Regarding incorrect answers, an inter-rater agreement reveals that if ChatGPT4.0 chose a specific incorrect answer, it was "substantially likely" that ChatGPT3.5 and Bard chose the same incorrect answer, with a "moderate-to-very good" agreement.

Conclusion

In conclusion, ChatGPT4.0 was the only LLM that outperformed the family medicine PGY-3 residents' national averages on the 2022 ITE, demonstrating its potential to be used as a study tool. While ChatGPT3.5 and Google Bard had an 85% chance or higher of passing the board exams, they both scored below the PGY-3 national average. In addition, ChatGPT4.0 scored 86.5% on the 2022 ITE and is, therefore, not always accurate. AI is a great resource for residents. However, they need to be aware of LLMs' limitations and to use them with caution to avoid learning false information in the form of an AI "hallucination".

Strategies For Improving Statin Therapy Adherence Among Patients with Diabetes

Matthew Harris MS3*, Jacob Myhre MS3*, Lauren M. Rafanan MS3*, Emma Robertson Blackmore PhD, & Christopher Smith MD

Florida State University College of Medicine
Daytona Campus

Background

- An estimated 38.4 million people of all ages, or 11.6% of the US population, have diabetes.
- Adults with diabetes are nearly twice as likely to develop heart disease or suffer a stroke
- There is strong evidenced-based data supporting statin therapy for both primary and secondary prevention of adverse cardiovascular events
- Healthcare Effectiveness Data and Information Set (HEDIS®) standardize performance

Aim

- Examine the HEDIS® measure 'Statin Therapy for Patients with Diabetes' ('SPD') for commercial members of Central Florida-based Health Maintenance Organization (HMO)
- Identify non-adherent members and formulate interventions to increase adherence with the SPD measure

Results

BRAINSTORMING SESSION

Identification of Barrier	Patients Reasoning for Barrier	How We Addressed Each Barrier
Financial Concerns	Medication is too expensive or patient cannot afford it	Inform patients of free and low cost statins available at in-house pharmacies
Difficulty with Obtaining Prescription	Inconvenience in physically obtaining prescription (e.g. lack of transportation/time)	Members have the option for RX Delivery to home; Offer patient 90 day supply to reduce travel
Concerns over Adverse Effects	Muscle pain and liver damage are common and outweigh the benefit of the drug	Offer to reduce dosage or change type of statin; Education to patient on relative rarity of Adverse Effects
Understanding of Disease	Unaware of CV risk of diabetes and/or benefit of statins due to lack of medical knowledge	Patient counseling by physician, clinical pharmacist or other healthcare personnel

CREATION OF FAX FORM

Florida Health Care Plans
An Independent Licensee of the Blue Cross and Blue Shield Association

Re: Bob Badheart **DOB**: Jan 01, 1980 **MRN**: 123456

Subject: Statin Therapy

Hello Dr. Example,

In an ongoing effort provide the best healthcare experience for our members, the Pharmacy Quality Assurance team at Florida Health Care Plans is engaging our members and physicians with the proactive goal of reaching our HEDIS measures and to be more in occurrence with best practices based on national guidelines.

One HEDIS measure we are currently focusing on is ensuring our members with diabetes aged 40-75 without atherosclerotic cardiovascular disease (ASCVD) be offered statin therapy. Evidence strongly suggests that statins provide significant long-term cardiovascular benefit for these patients.

Records indicate that statin therapy for your patient (listed above) may be indicated.

Our team has already contacted and discussed the health benefits and potential adverse effects of statins with your patient, and they have responded positively and expressed interest in statin therapy.

If you agree with your patient starting statin therapy, **please simply sign the prescription below and return via fax to 1-888-555-5555**. Please feel free to make any corrections on the prescription you feel necessary.

Regards,
Florida Health Care Plans
Pharmacy Quality Assurance
Phone: 1-888-555-5556
Fax: 1-888-555-5555

Prescription – Please sign and return via fax to 1-888-555-5555

Rx

Dr. Justa N. Example
203 N Halifax Ave
Suite 201
Daytona Beach, FL 32118

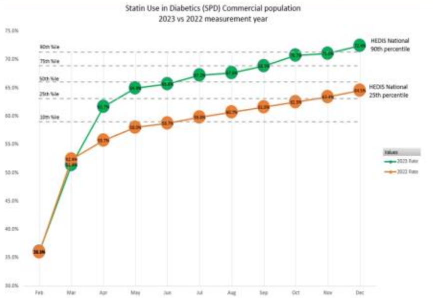
Patient Name: Bob Badheart **MRN**: 123456
DOB: Jan 01, 1980

Medication: Simvastatin **Strength**: 20 mg **Quantity**: 90
Directions: take one tablet by mouth daily **Refills**: 1

Signature: ____________________ **Date**: __________
NPI: 554433221

DATA COLLECTED

SPD Measure	Dec 2022 (Baseline)	Dec 2023 (Baseline)
Total Meeting SPD HEDIS measure criteria + on Statin Therapy (numerator)	989	1,111
Total Meeting SPD HEDIS measure criteria (denominator)	1,535	1,534
Rate:	64.52%	72.43%
HEDIS Percentile:	25th	90th



Materials and Methods

Statin Therapy for Patients with Diabetes ('SPD') Definition

The percentage of members 40-75 years of age during the measurement year with diabetes, who do not have clinical atherosclerotic cardiovascular disease (ASCVD)

Received Statin Therapy:

Members who were dispensed at least one statin medication of any intensity during the measurement year (01/01/2023 to 12/31/2023)

$$= \frac{\text{Number of members who were dispensed} \geq 1 \text{ statin medication of any intensity during the measurement year}}{\text{Eligible population}}$$

Brainstorming session
Identification of potential barriers to statin adherence

Generate List of Non-Adherent Members with clinical and demographic information based on HEDIS® criteria

Chart reviews to understand potential reasons why members were not currently prescribed a statin

Phone calls to members by clinical pharmacists to discuss individual adherence issues, provide education, and offer statin therapy

Contacted member physicians directly via prescription fax form if the member expressed interest in starting/restarting statin therapy

Conclusion

- Creating a simple, easy to use fax tool streamlines the process of prescribing patients the correct statin medication
- By increasing adherence with the SPD HEDIS measure, we are also improving the quality of care for members within the healthcare plan
- Strategic planning and preemptive barrier reduction ultimately allowed the health management network to move from the 25th to 90th percentile for the SPD HEDIS® measure compared to other networks
- Such strategies and measures should be considered for success of future quality improvement measures

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Assessing Transportation Use Among Patients at KNIGHTS Clinic

UCF College of Medicine
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GRACE

DIEBEL LEGACY FUND
A FUND AT
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Background

- The Keeping Neighbors in Good Health Through Service (KNIGHTS) Clinic is a **student-run free clinic that serves low-income and uninsured patients in Orlando, Florida.**
- Public transportation systems can experience occasional **issues such as delays or disruptions**, which may **impact the ability** of patients who rely on this mode of transportation **to arrive** at Grace Medical Home (GMH) for their **scheduled appointments** with the KNIGHTS clinic.
- This study **evaluates transportation, an important social determinant of health**, to inform us of ways we can better **advocate** for our patients.
- The aim of this project is to **collect data** regarding aspects related to patient transportation use, such as the form of transportation used, if this form of transportation is still available, and the cost of transportation. We aim to use this information to inform and expand our ongoing efforts in reimbursing patients in need of transportation to GMH.

Methods

- The study design utilizes an **optional survey** that assesses patients' transportation use to the KNIGHTS Clinic and their perceived issues with their transportation arrangement.
- Survey **questions include modes of transportation they utilize to get to GMH, time and distance traveled, barriers when finding transportation, and outcomes** they may have experienced as a result of limited transportation.
- The survey was administered to patients **(n = 16)** utilizing the Qualtrics platform and is available in **English, Spanish, and Portuguese.**
- Outcomes were measured via checklist fashion or multiple-choice survey responses.
- Data was analyzed to report descriptive statistics on the outcomes queried. Two tailed, unpaired t-tests with assumed equal variances were conducted at a significance level of $\alpha < 0.05$ to compare transit costs for patients who drove versus used other modes of transportation to arrive at KNIGHTS Clinic.

Results

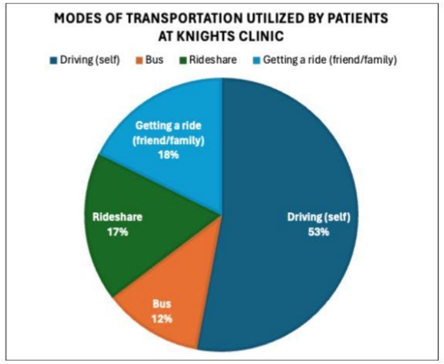

Figure 1: Modes of transportation for KNIGHTS Clinic patients. A majority of patients drove to clinic (n = 7). Less commonly, patients used other modes of transportation such as public buses or a rideshare service (n = 5), or rode with a friend or family member (n = 3).

	Driving	Bus or Rideshare	All Patients	
Average Cost (Dollars)	12.00	14.67		12.73
P-Value	0.61		**Driving**	0.83
			Bus or Uber	0.68

Table 1: Travel costs for patients coming to KNIGHTS Clinic. On average, patients who used other modes of transportation such as buses or rideshare services spent more on transit than those who drove themselves. There was no significant difference in travel costs for patients who drove themselves or used other modes of transport.

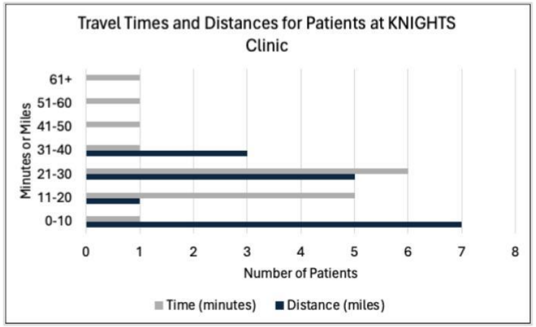

Figure 2: Distribution of travel times (minutes) and distances (miles) for KNIGHTS Clinic patients. A majority of patients traveled 0-10 miles (n = 7; 44%) and took 21-30 minutes (n = 6; 38%) to arrive at KNIGHTS Clinic.

Discussion

- Though a **majority of patients surveyed drove themselves**, the **cost** of transit for patients who used **other modes** of transit such as buses or rideshare services was, on average, **greater than those who drove.**
- Causes of transportation-related cancellations included **inconvenient bus times, bus cancellations, and last minute childcare problems or obligations.**
- Consequences of missed appointments included **inability to receive medications, increased stress/anxiety, and rescheduling other obligations.**
- These results demonstrate a benefit to providing **travel reimbursement** for patients who rely on public transit or rideshare services in order to **reduce disparities in access to care for these patients.**
- Of note, patients with longer transit times did not necessarily travel the greatest distances to arrive at their appointments, and **greater transit times relative to travel distances were associated with use of public buses.**
- Thus, **providing more vouchers for rideshare services** may be more beneficial to patients than bus or public transit vouchers. These would also help patients with both cost and time associated with travel to GMH.

Limitations & Future Directions

- Some limitations of this study include small sample size and missing data due to not all patients answering free text portions of the survey.
- In the future, we would like to retrospectively look at how often GMH is paying for patients' transportation and continue to advocate for more funding as needed. We would also like to further explore reasons for transportation-related cancellations and how we can help as well as gauge interest for bus vouchers.

Acknowledgements

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Effect of Neurostimulants on Persistent Post-Concussive Symptoms

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INTRODUCTION

- Persistent post concussive symptoms (PPCS) including neurocognitive dysfunction is a crucial complication of traumatic brain injury
- Common symptoms of PPCS include headache, nausea, fatigue, dizziness, and deficits in cognition and memory

PURPOSE

- The neurocognitive dysfunction component of PPCS has limited guidance on management
- evaluate the functional impact of stimulant therapy use in mTBI patients with PPCS.

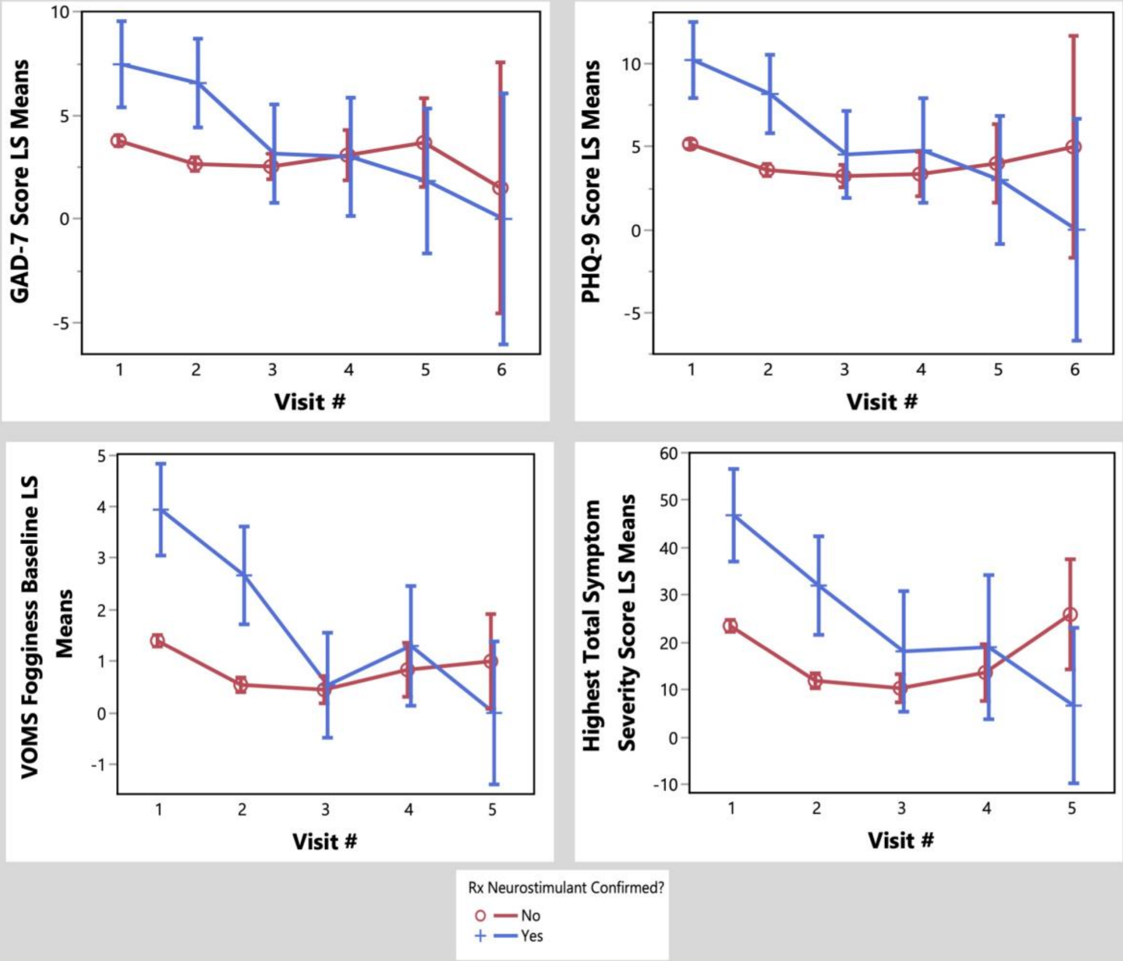
DESIGN

- A retrospective review from June 2017 to October 2023:
- 1,028 unique patients, 377 female & 651 male
- Comparison confirmed via medical record: treatment of diagnosed sport-related concussion with neurostimulant (n=21) vs standard of care (n=1,007)

METHODS

Mixed model ANOVA statistical analysis comparing the following longitudinal effects of PPCS:

- PHQ-9, GAD-7, Total Symptom Severity, and VOMS/NPC fogginess scores



RESULTS

Mixed model ANOVA demonstrated NS had higher PHQ-9 scores vs SOC for Visit 1-2 ($p<0.010$). For GAD-7 with mixed model ANOVA, NS had higher scores vs SOC for Visit 1-2 ($p<0.028$). For Total Symptom Severity, NS had higher scores for Visits 1-2 ($p<0.007$) compared to SOC. For VOMS Fogginess or NPC Fogginess, NS had higher scores for Visits 1-2 ($p<0.001$) compared to SOC. However, for all dependent variables, there was no difference between groups by Visit 3 or onward ($p>0.05$).

CONCLUSION

Initial Visit

- Higher scores in total symptom severity score, PHQ-9, GAD-7, fogginess complaint during VOMS

Next 2-3 Visits

- Normalization of PPCS compared SOC for those with higher scores

SIGNIFICANCE

As a retrospective study, correlation of NS to decreases of PPCS is evident, but causation cannot be confirmed. Sufficient evidence justifies a prospective trial with NS therapy to determine its effect on decreasing PPCS.

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Amoxicillin Induced Black Hairy Tongue

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ABSTRACT

Black hairy tongue (BHT) is an uncommon benign condition in which the tongue acquires elongated filiform papillae, presenting grossly as discolored and “hairy.” The prevalence of BHT ranges from 0.6% to 11.3%[1,2] reporting to affect individuals aged from 7 to 80 years old[3]. Antibiotic use has been associated with BHT but there are few reported cases of antibiotic-induced BHT in the pediatric population. In this case report, we highlight an instance of amoxicillin-induced black hairy tongue in a 9-month-old female.

CASE

- 9-month-old female presented with fever, congestion, rhinorrhea, non-productive cough, intermittent diarrhea, and decreased appetite for one week.
- Physical exam was notable for bilateral erythematous, bulging tympanic membranes and was diagnosed with acute otitis media.
- Prescribed 0.3% otic solution and 523 mg of amoxicillin 200mg/5mL oral suspension BID for ten days.
- Tongue discoloration began seven days after starting antibiotics.
- Discoloration resolved eleven days after completion of treatment.
- She had no associated symptoms including pain.

BACKGROUND

- Due to reduced desquamation of the tongue
- Associated with antibiotic use, xerostomia, poor oral hygiene, and heavy consumption of tea, black coffee, tobacco, and alcohol[2].
    - Linezolid, tetracyclines, erythromycin, metronidazole, and amoxicillin with clavulanic acid[3,4].

[redacted]

Figure 1. Black-brown tongue discoloration present six days after starting amoxicillin course

DISCUSSION

BHT is a benign, self-limited disease with no significant associated symptoms. Treatment for BHT includes cessation of the causative agent and good oral hygiene[9]. As related to our patient, tongue discoloration resolved eleven days after completion of the amoxicillin course without intervention. Factors predisposing infants to development of black hairy tongue may include consumption of pureed foods as these foods do not promote the exfoliation of the tongue as compared to solid foods[8]. Patients and their families should be counseled on the possibility of benign, self-limited tongue discoloration during antibiotic treatment to avoid unnecessary healthcare visits, emotional distress, and premature discontinuation of therapy.

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The Red Eye: What the Primary Care Physician Should Know about Common Ophthalmology Conditions

Khushi Saigal [1], Ankit Shah [2], MD, Sharon Aroda [3], MD

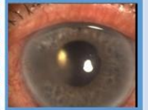
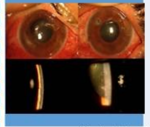
Introduction[1]:

- The red eye is the most frequently encountered ophthalmic chief complaint in primary care medicine
- Eye-related concerns account for 2-3% of visits to primary care offices
    - The red eye accounts for about 50% of eye related primary care visits
- Bacterial, viral and allergic conjunctivitis, pre-septal and orbital cellulitis, hordeola, chalazia, blepharitis, dacryocystitis, microbial keratitis, anterior uveitis, acute angle-closure glaucoma, episcleritis, scleritis, pinguecula, and pterygia are common causes of a red eye

Red Flags for Severe Eye Disorders:

1. Change in vision
    - AACG
    - Scleritis
    - Uveitis
2. Moderate to severe pain
    - AACG
    - Scleritis
    - Keratitis
3. Moderate to severe photophobia
    - Uveitis
    - Keratitis
4. Loss of pupillary reactivity
    - AACG
    - Uveitis

Table 1: Differential Diagnosis of Red Eye

	Vision change	Photophobia	Pain	Discharge	Redness	Physical exam	Distinguishing factors	Notes
Viral conjunctivitis 	-	-	-	Watery, sometimes mild mucoid	Begins in 1 eye then spreads bilaterally quickly	lymphadenopathy, associated URI symptoms (sore throat, nasal congestion), follicular reaction	Concomitant upper respiratory symptoms	Most common cause of conjunctivitis Adenovirus is the most common pathology Highly contagious
Bacterial conjunctivitis 	-	-	-	Profuse, thick, purulent; matted crusting in morning	Unilateral but can spread bilaterally			Staphylococcus aureus in adults, severe purulent discharge can suggest gonococcus disease (STD), inclusion conjunctivitis (chlamydia)
Allergic conjunctivitis 	-	-	-	watery	bilateral	Cobblestoning on conjunctiva, papillary conjunctival reaction, allergic shiners, atopic disease, eczema hx	Pruritus to eyes, seasonal symptoms	
Episcleritis 	-	mild	-	-	Most often unilateral	mobile with CTA, usually focal	Redness resolves with phenylephrine installation	May be associated with a systemic cause
Scleritis 	+	+	+++	-	Unilateral or bilateral	scleromalacia perforans, bluish hue to sclera, nodular vs diffuse. Non-mobile, avascular and necrotic	Non-blanching with phenylephrine instillation, high risk of perforation	commonly associated with a systemic autoimmune disease (life threatening) Emergent ophthalmology referral is necessary
Microbial Keratitis (Bacterial, Herpetic, Fungal or acanthamoeba) 	Variable depending on infection and involvment	++	++	Purulent or nonpurulent	Unilateral	Corneal infiltrates, hypopyon, epithelial defect, dendrite (HSV), perineuritis (acanthamoeba), satellite lesions and feathery borders (fungal)	high risk for corneal perforation	Greatest risk factor: inappropriate use of contact lenses Emergent ophthalmology referral required as sight and eye threatning
Uveitis 	+	++	++	Possible minimal watery discharge	Unilateral, ciliary flush	Miosis Pain with direct and consensual light	Cell and flare on slit-lamp examination, mutton fat (granulomatous) vs stellate keratic precipitates, iris nodules (busacca/ koeppe nodules), posterior synechae with poorly dilated pupil, cataract formation	May be associated with systemic cause Urgent ophthalmology evaluation
Acute angle-closure glaucoma 	++	++	++	-	Unilateral and moderate	Mid-dilated, nonreactive pupil Cloudy cornea from elevated IOP Iris bombe	Increase in IOP, eye firm on palpation, severe headache, nausea/vomiting	Headache, nausea and vomiting may be present Urgent ophthalmology evaluation Certain medications predispose: Topamax, anitcholinergics, possible PDE5 inhibitors

++ means that this sign is common for the corresponding disease; + means that this sign is seen but more rare for the corresponding disease; - means that this sign is either extremely rare of not seen [1-7]

Table 2: Management of Red Eye Conditions [1]

Action	Condition	Description
Referral	Acute angle closure glaucoma, uveitis, scleritis, keratitis, orbital cellulitis that does not resolve within 7-10 days of symptom development	
Treatment	Viral conjunctivitis	Supportive care with cold compresses and artificial tears is usually sufficient for treatment. If the patient's symptoms persist for a duration of 10 days or if there are any indications of corneal involvement, the primary care physician must make a referral to an ophthalmologist
	Bacterial conjunctivitis	Encourage good hand and eye hygiene, topical antibiotics, including topical fluoroquinolones, aminoglycosides and macrolides are reasonable treatment options. Refer after 4 weeks + with symptoms
	Allergic conjunctivitis	Over-the-counter oral antihistamines and topical histamine H1-receptor antagonists can provide relief from symptoms
	Episcleritis	artificial tears, topical nonsteroidal anti-inflammatory drugs, and rarely topical steroids

Conclusion:

Primary care physicians encounter a spectrum of red eye conditions, each requiring tailored management. Recognition of emergent cases, understanding self-resolving conditions, treating certain conditions in the primary care office, and judiciously referring patients to ophthalmology or other specialists ensure comprehensive and timely care for individuals presenting with red eye complaints

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