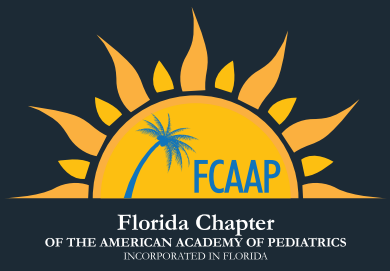
The Florida Pediatrician



THE PEER-REVIEWED JOURNAL OF THE FLORIDA CHAPTER OF THE AAP FALL 2022

STUDENT TRAINEE EDITION

The Florida Pediatrician (Online)
ISSN 2688-559X

CONTENTS

VOLUME 42, ISSUE 4

Florida Chapter of the American Academy of Pediatrics
INCORPORATED IN FLORIDA

The Florida Pediatrician is the peer-reviewed journal of the Florida Chapter of the American Academy of Pediatrics, published by the FCAAP Editorial Board for FCAAP members.

Florida Chapter of the American Academy of Pediatrics, Inc.

1400 Village Square Blvd #3-87786, Tallahassee, FL 32312 | 850-224-3939 | info@fcaap.org

EDITOR'S NOTE

Dear Readers,

Another successful Annual Conference of the Florida Chapter of the AAP! This was the Ninth Annual Conference. We started in 2014, when I had the privilege of being the President of the Chapter. We were nervous and did not want to lose money, but we never looked back. The conference continues to improve. Congratulations to the leadership and staff of FCAAP for another terrific year. Next year is the big tenth anniversary of the conference. As has been our tradition, we dedicate the Fall Edition of the Journal to our Annual Conference. Mark your calendars for the next year's conference during the Labor Day weekend.

This year we also had an in person Annual Conference of the American Academy of Pediatrics for the first time since 2019 and it was a major success. The conference was great and it was so wonderful to see so many friends and colleagues in person. Next year NCE is in DC.

There is a lot going on since I last wrote. We now have Monkeypox, another emerging and re-emerging infection. Fortunately, few children have been infected in the US and the disease in children appears to be not to as severe. We are still seeing cases and the outbreak is ongoing. There is also a vaccine available for those eligible by age and exposure. In addition, an antiviral called tecovirimat is available under a research IND from the CDC to treat monkeypox. Monkeypox spreads by direct contact and therefore does not spread as easily as COVID.

Speaking of COVID, please continue to encourage your patients to get vaccinate and, for those eligible, to get boosters. The vaccine is safe and effective despite the pseudoscience misinformation being promoted by some to suggest that the vaccine has dangerous side effects.

Speaking of vaccines, please encourage everyone eligible to get influenza vaccine. There is a chance that this year's influenza season is going to be a bad one. This based on information from the Southern hemisphere, which had a horrible influenza season. Therefore, there is a good chance that there will be an equally terrible influenza season in the Northern hemisphere. The numbers are already starting to rise.

We are already seeing an RSV season the likes of which we have not seen for many years. Like the rest of the country, Florida hospitals are full of patients with RSV. In addition, we are seeing a large number of children with Rhinovirus infection admitted to hospitals. With hospitals full of patients with RSV and Rhinovirus, an increasing number of cases of influenza, and the possibility of a resurgent COVID in the winter, we may be heading towards a perfect storm, a "Quademic."

Finally, a reminder that starting January 1, 2023, Florida state law requires Cytomegalovirus (CMV) testing for all newborns who fail hearing screens. Please work with your hospitals to establish processes for testing newborns for CMV when necessary. The FCAAP Emerging Infections Task Force is developing an algorithm to assist in this effort.

Mobeen H. Rathore, MD, CPE, FAAP, FPIDS, FSHEA, FIDSA, FACPE
Editor, The Florida Pediatrician

EDITORIAL BOARD

EDITORIAL BOARD

CASE REPORT

Hepatitis in a Febrile Infant with Coronavirus Disease 2019 (COVID-19)

Juan Cardenas Fimbres, MD; Jessica Warrick-Imrisek, MD; Nizar F Maraqa, MD, FPIDS*
Department of Pediatrics, University of Florida College of Medicine Jacksonville
**Corresponding Author*

ABSTRACT

We report a 7-week-old infant who presented with fever and transaminitis as a manifestation of infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The infant was evaluated for common age-related etiologies of hepatitis, ruling those out. As the coronavirus disease 2019 (COVID-19) pandemic is expected to cause more cases in the unvaccinated pediatric population, we emphasize the importance of considering SARS-CoV-2 infection in the differential diagnosis of hepatitis in infants under 1 year of age, in addition to the other age-related etiologies.

INTRODUCTION

While fever and respiratory symptoms have been the most common manifestations of SARS-CoV-2 infection in young children, less common manifestations with varied prognostic implications have been identified. [1, 2] Specifically, liver involvement has been described in COVID-19 and correlated with mortality in adult studies.[3] Little information is available about hepatitis in young children with COVID-19.

We report a 7-week-old infant with fever and transaminitis where more common etiologies of hepatitis were ruled out, leaving SARS-CoV-2 as the most likely cause. SARS-CoV-2 hepatitis can mimic other frequent etiologies of hepatitis in febrile infants and should be considered in the differential diagnosis.

CLINICAL COURSE

A 7-week-old male infant presented to the emergency department (ED) with fever (a rectal temperature of 38.3°C), cough, nasal congestion, and a decrease in oral intake. He was born at full term via vaginal delivery with no significant prenatal maternal history and no perinatal or postnatal complications. His father and mother tested positive by polymerase chain reaction (PCR) for SARS-CoV-2 two days prior to his presentation. The mother developed fever and breathing difficulty for which she was hospitalized while the father remained asymptomatic.

On initial physical examination in the ED, the infant appeared inactive, but well hydrated and not fussy. He had a rectal temperature of 39°C, heart rate (HR) of 147 beats/minute, respiratory rate of 34 breaths/minute, blood pressure of 124/62 mmHg, and SpO2 of 100% on room air. A blood culture, urinalysis and culture, complete blood count (CBC), comprehensive metabolic panel (CMP), cerebrospinal fluid (CSF) analysis and culture, as well as an upper respiratory viral PCR panel (including SARS-CoV-2) were collected. A dose of ceftriaxone was administered intravenously, and the patient was admitted to the general floor for further management.

The initial workup was remarkable for a bloody CSF that was uninterpretable for cell analysis, with moderate turbidity, protein of 138 mg/dL (reference range: 12-60), and glucose of 54 mg/dL (reference range: 45-75). He had a peripheral white blood cell (WBC) count of 5.4 x10^3/μL (reference range: 5-19.5), 78% lymphocytes, 17% neutrophils and 2% band forms with an absolute neutrophilic count (ANC) of 0.7 x10^3/μL (reference range: 1.5-10). His upper respiratory viral PCR panel was positive for SARS-CoV-2 as well as Rhinovirus/Enterovirus. He had a serum aspartate aminotransferase (AST) of 121 IU/L (reference range: 10-60), alanine aminotransferase (ALT) of 54 IU/L (reference range: 17-63, alkaline phosphatase of 357 IU/L (reference range: 67-391), total bilirubin of 1.4 mg/dL (reference range: 0.3-1.8), protein of 5.7 g/dL (reference range: 4.4-6.8), and albumin of 3.8 g/dL (reference range: 2.7-4.7).

On hospital day 2 (HD#2), he remained febrile (maximum rectal temperature of 38.4°C) and on room air. Repeat testing revealed an increasing AST to 323 IU/L and ALT to 123 IU/L with worsening neutropenia (ANC of 0.40 x10^3/μL). On HD#3, his fever continued with a further increase of his liver transaminases (AST 468, ALT 468). Ceftriaxone was discontinued after blood, urine, and CSF cultures remained without bacterial growth at 48 hours. An ultrasound of the abdomen demonstrated an enlarged echogenic liver with no focal lesions.

The fever resolved on HD#5. The ANC remained low at 0.70 x10^3/μL but the liver transaminases continued rising. Ferritin level peaked at 9,284 μg/L (reference range: 24-336) as shown in Table 1. His C-reactive protein (CRP) was 0.1 mg/dL (reference range: 0.5-1), B-natriuretic peptide (BNP) was 22 pg/mL (reference range: 1-100), and prothrombin time was 12.7 seconds (reference range: 11.8-15). Additional workup recommended by the Infectious Diseases consulting service included SARS-CoV-2 IgG, blood PCR for cytomegalovirus (CMV), herpes simplex virus (HSV), and enterovirus as well as hepatitis C antibody and serum lactate dehydrogenase (LDH). The infant's physical examination continued to be unremarkable, and he was feeding both breast milk and formula appropriately.

After peaking on HD#6, the serum transaminases and ferritin level gradually decreased until the patient was discharged on HD#8. Workup for the other potential etiologies for hepatitis came back negative. Ten days following discharge, his AST, ALT, and LDH levels were back within normal limits.

			Laboratory Values Test (Reference Range)			**Maximum Temperature**
	ALT (16-63 IU/L)	AST (10-60 IU/L)	ANC (1.5-10 x10^3/μL)	Total Bilirubin (0.3-1.8 mg/dL)	Ferritin (24–336 ng/mL)	
HD#1	121	54	0.70	1.4		39.0°C
HD#2	323	123	0.40	1.1		38.3°C
HD#3	468	169	0.70	0.9		38.9°C
HD#4	899	287	0.70	0.9		38.4°C
HD#5	1,259	385		0.7		37.9°C
HD#6	1,393	435		0.7	9,284	37.2°C
HD#7	966	363		0.8	3,680	36.8°C
HD#8	543	262		0.7	1,758	37.4°C
Day 18*	35	29		0.7		-

AST: aspartate aminotransferase; ALT: alanine aminotransferase; ANC: absolute neutrophilic count;
IU/L: International units per liter; mg/dL: milligrams per deciliter; ng/mL: nanograms per milliliter; HD: Hospital Day.

*: 10 days after discharge from the hospital.

Table 1: Select laboratory values and corresponding maximum daily temperature

DISCUSSION

The majortiy of children infected with SARS-CoV-2 are asymptomatic or have mild symptoms of COVID-19. Compared to adults, children with COVID-19 tend to have a better outcome.[2] In a metanalysis that included 5,829 pediatric patients who tested positive for SARS-CoV-2, Cui et. al. reported that 20% were asymptomatic, 33% had mild symptoms (described as an acute upper respiratory infection or isolated digestive symptoms), 51% had a moderate illness (i.e. pneumonia without hypoxia or difficulty breathing), 7% had severe pneumonia with hypoxia and dyspnea and 5% were critical (presenting with or rapidly progressing to acute respiratory failure). The authors noted that there was a higher proportion of critically ill cases among infants < 1 year of age compared to older children.[2]

Most symptomatic children with COVID-19 present with respiratory symptoms. Commonly described manifestations include fever, cough, sore throat, nasal congestion, and rhinorrhea.[1] Less frequently, hepatic, pancreatic, cardiac, renal, and lymphocyte alterations have been described in acute COVID-19.[1-4] Additionally, patients with COVID-19 who have no pre-existing liver disease have been described to have abnormal levels of AST and ALT.[4, 5] However, in the majority of these cases, the liver involvement is usually mild and self-limited.[5]

In the febrile infant we present here, the liver enzymes peaked as the fever resolved and respiratory symptoms subsided. While a liver biopsy was not performed for a definitive etiologic diagnosis due to the favorable course and the invasive nature of the procedure, other potential causes of infectious hepatitis were investigated. This additional workup detected no viremia for enterovirus, CMV, or HSV, a negative hepatitis C serology, and negative maternal hepatitis B surface antigen status which make these unlikely etiologies of the infant's hepatitis.

SARS-CoV-2 has been described to cause direct damage to liver parenchyma in COVID-19 patients who had a liver biopsy, suggesting tropism of the virus for the hepatocytes.[4] SARS-CoV-2 transmission has been reported after allograft transplantation of liver parenchyma.[6]

It remains inconclusive if SARS-CoV-2 can be transmitted vertically, but cases of neonates that test positive for SARS-CoV-2 within the first 24 hours of life without significant exposure, other than at the time of delivery, have been reported.[6, 7]

CONCLUSIONS

As the healthcare community continues to deal with the COVID-19 pandemic and the impacts of emerging new variants with greater infectivity,[8] especially on the unvaccinated pediatric population, we present this infant's case to alert pediatricians to the possibility of hepatitis due to SARS-CoV-2 among the very young. SARS-CoV-2 should be part of the differential diagnosis of acute hepatitis in febrile infants. Additionally, while elevated ALT levels have been directly correlated with mortality in adults with COVID-19, this has not been observed in infants and young children.[3] Our infant's hepatitis resolved spontaneously as he recovered from COVID-19, but it may be important for pediatric providers to follow the liver enzyme levels to ensure their return to normal. More data need to be collected to better describe the liver involvement in infants who develop COVID-19.

REFERENCES

1. Cui, X, Zhao, Z, Zhang, T, et al. A systematic review and meta-analysis of children with coronavirus disease 2019 (COVID-19). J Med Virol 2021;93(2):1057-1069.
2. Ludvigsson, JF. Systematic review of COVID-19 in children shows milder cases and a better prognosis than adults. Acta Paediatr 2020;109(6):1088-1095.
3. Papadopoulos, N, Vasileiadi, S, Deutsch, M. COVID-19 and liver injury: where do we stand? Ann Gastroenterol 2020;33(5):459-464.
4. Sun, J, Aghemo, A, Forner, A, et al. COVID-19 and liver disease. Liver Int 2020;40(6):1278-1281.
5. Su, TH, Kao, JH. The clinical manifestations and management of COVID-19-related liver injury. J Formos Med Assoc 2020;119(6):1016-1018.
6. Alzamora, MC, Paredes, T, Caceres, D, et al. Severe COVID-19 during Pregnancy and Possible Vertical Transmission. Am J Perinatol 2020;37(8):861-865.
7. De Rose, DU, Piersigilli, F, Ronchetti, MP, et al. Novel Coronavirus disease (COVID-19) in newborns and infants: what we know so far. Ital J Pediatr 2020;46(1):56.
8. Centers for Disease Control and Prevention. National Center for Immunization and Respiratory Diseases (NCIRD). Division of Viral Diseases. Delta Variant: What We Know About the Science; 2021. https://www.cdc.gov/coronavirus/2019-ncov/variants/delta-variant.html. Accessed October 21, 2021.

CASE REPORT

Swollen and Erythematous Finger Following a Paper Cut

Joanna Theophilopoulos, BS[1]; Keval Patel, BS[1]; Kathryn E. Wheeler, MD[2]; Kathleen A. Ryan, MD[2]; Carolyn G. Carter, MD, MS[2]
[1]University of Florida College of Medicine
[2]Department of Pediatrics, University of Florida College of Medicine

CASE REPORT

A 5-year-old girl with an unremarkable medical history presented to her pediatrician with swelling and blistering of her left index finger. Ten days prior, she sustained a paper cut on the palmar surface of the middle phalanx of this finger. Over the next few days, she swam at the beach and in a river. Subsequently, the wound became erythematous and swollen. Approximately five days after the paper cut, blisters began to erupt. The patient was taken to an urgent care clinic where she was prescribed cephalexin for a presumed bacterial infection.

Over the next 48 hours, the phalanx became increasingly erythematous and more blisters erupted, which prompted a visit to her pediatrician. On exam, there was erythema and edema of the middle phalanx of the left index finger with a healing laceration on the palmar surface surrounded by multiple clear, fluid-filled vesicles (Figure 1). She had mobility of the finger, but it was painful. The parents denied any drainage from the vesicles or systemic symptoms. Two of the vesicles were punctured and fluid was sent for bacterial culture and HSV PCR. The patient's antibiotic regimen was changed from cephalexin to clindamycin and topical mupirocin.

Three days later, the patient presented with worsening symptoms, despite using the antibiotics as prescribed. On exam, there was increased blistering of the left index finger, as well as an additional blister on the center of her left palm (Figure 2). The erythema and edema persisted, and the patient had mildly limited active range of motion. She denied any pain, tingling, or itching. At this point, the parents informed the pediatrician the patient's sister recently had resolution of cold sores prior to the patient developing blisters on her finger. During this visit, the bacterial culture came back negative, but the HSV PCR was still pending. The patient was prescribed oral acyclovir 400 mg three times daily for five days awaiting the PCR results, and clindamycin was discontinued.

Two days later, the patient returned to the urgent care clinic due to development of additional lesions that appeared pustule-like. The urgent care physician suspected MRSA and resumed oral clindamycin, in addition to continuing acyclovir and mupirocin.

Figure 1

Figure 2

The patient was referred to the Pediatric Infectious Disease Clinic for further evaluation the following day. The blisters turned cloudy, with reddened edges, and there were two new lesions on the palm. The lesions had not spread anywhere else on the body, and she had no fever, malaise, or headache. She still had functional use of her hand, but she reported tactile pain. At this time, the HSV PCR from the initial visit to the pediatrician came back positive for HSV-1 and negative for HSV-2. The patient was diagnosed with herpetic whitlow.

Of note, the patient did not have a personal history of cold sores. However, her 12-year-old sister had such a history and recently recovered from an oral lesion. The patient's father also had a distant history of cold sores. Since the patient had no history of HSV but was in very close contact with her sister who recently had a lesion, this was likely the source of the exposure. The patient's herpetic whitlow was likely a primary HSV infection, accounting for the severity of the lesions.

At the infectious disease clinic, the lesions appeared to be healing. The mother reported that no new lesions had appeared for the preceding few days. Due to ongoing concern for a bacterial superinfection, a bacterial culture of the vesicular fluid was repeated. The fluid was clear in appearance. Five days later, the repeat bacterial culture came back negative. The patient's mother reported significant improvement at this point with minimal swelling. No blisters remained and the skin was desquamating where the blisters had been. At this point clindamycin was discontinued, and the patient completed the 10-day course of acyclovir.

DISCUSSION

Herpetic whitlow is an infection of the phalanx or hand caused by Herpes Simplex Virus Type 1 or 2 (HSV1 or HSV2). HSV is spread via direct contact of mucous membranes or broken epidermis.[1, 2] Herpetic whitlow can result if broken epidermis on the hand is exposed to either oral or genital herpetic lesions. In adults, herpetic whitlow often occurs via exogenous inoculation. Healthcare workers, such as dentists, can be affected if they are exposed to secretions from patients with oral herpetic lesions.[3] In children, herpetic whitlow typically occurs via autoinoculation when a child has coexisting gingivostomatitis or herpes labialis. However, there have been several cases of children contracting herpetic whitlow without a personal history of HSV.[4–7] Exogenous inoculation from close contacts who are infected can also occur in children.[6, 7] This is likely what occurred in the case we have presented, as the parents recalled the sister with the cold sore kissed the patient's paper cut.

Herpetic whitlow lesions typically appear 2-20 days following inoculation.[1, 2, 7] The lesions present as painful, non-purulent, fluid-filled vesicles on an erythematous base. After about a week, the fluid can become cloudy, which can mislead clinicians.[6] In one case series, 65% of patients with herpetic whitlow were initially misdiagnosed with a bacterial infection.[6] This case is unique in that the patient had a laceration associated with her herpetic whitlow. In addition, her exposure to salt and freshwater expanded the differential to water-borne pathogens. Furthermore, the patient's lesions began to appear pustule-like several days after the blisters initially erupted. This was concerning for a superimposed bacterial infection but could have simply represented a natural progression of the lesions.

Understanding the natural progression of the lesions can help clinicians properly diagnose the infection and avoid unnecessary antibiotics. Typically, over the course of two weeks, the vesicles will crust and desquamate.[7] Left untreated, herpetic whitlow typically resolves after 3-4 weeks.[7] The skin will usually re-epithelialize without scars or deformities.[7]

Herpetic whitlow can have varying presentations in different patients. It can present as a single vesicle or in clusters. In some cases, there is associated regional lymphadenopathy or lymphangitis.[8] There are rarely systemic symptoms, but in some cases, patients report a flu-like prodrome preceding the cutaneous symptoms.[2] The most common prodromal symptoms are pain, tingling, or itching in the affected area.[8]

Diagnosis of herpetic whitlow can be made on clinical grounds, especially if the infection occurs in an individual with a history of HSV, or if the individual was in close contact with another person infected with HSV.[6] Laboratory analysis can aid in making the diagnosis in more complex cases. Viral cultures and Tzanck smears have fallen out of favor due to limited sensitivity.[7, 9] PCR testing is a much more sensitive option and can be done with the fluid obtained from a simple needle puncture of a vesicle.[6, 9]

Guidelines for treating herpetic whitlow are not well-established. In healthy patients, the infection is typically self-limiting, so treatment is not always necessary. Systemic acyclovir may shorten the course of the infection and prevent the eruption of additional vesicles.[6] Treatment during prodromal symptoms may prevent eruption of blisters.[10] The use of topical acyclovir is controversial. In one review of several cases, there was no reported benefit of topical therapy.[6] However, more research is needed as some clinicians report anecdotal benefits.[10]

HSV remains latent in sensory ganglia after initial infection. Recurrence can be triggered by physiological and psychological stressors.[1] Herpetic whitlow recurrence is observed in 20-50% of patients.[1] Recurrent infections make up the majority of HSV hand infections and present more often in adults aged 20-40.[11] Recurrence is typically preceded by prodromal symptoms including pain, tenderness, pruritus, burning, and aching.[11] Prodromal symptoms vary in duration, ranging from 3 hours to 3 days. Primary infections are typically more severe than subsequent recurrent infections.[12] There are no clear guidelines that address the management of recurrent herpetic whitlow. However, in a study of patients with recurrent herpetic whitlow caused by HSV-2, oral acyclovir (2 g/day in three doses for 10 days) started during the earliest phase of a recurrence resulted in a reduced duration of symptoms from 10.1 to 3.7 days.[11]

In healthy individuals, herpetic whitlow is typically a self-limiting infection. However, there are complications that should be considered. Superinfections with *Staphylococcus aureus* and other bacteria are the most common complication.[6] Other complications include nail dystrophy and permanent nail loss.[6] Rarely, herpetic whitlow can result in HSV encephalitis or meningitis.[6, 13] Incision and drainage is contraindicated in herpetic whitlow, as this can increase the risk of viremia and superimposed bacterial infections.[6, 8, 14] These complications illustrate the need for prompt and accurate diagnosis of herpetic whitlow.

CONCLUSION

Herpetic Whitlow is usually a self-limiting HSV infection of the hand or digits. Maintaining an index of suspicion and understanding the natural progression of the lesions are critical in diagnosing this infection. Our patient presented with a primary HSV-1 infection of her finger from familial inoculation of a superficial laceration. Her lesions spread and the vesicles became cloudy over a two-week period. Lack of improvement with antibiotic therapy and two negative bacterial cultures point away from a secondary bacterial infection as a cause for her worsening symptoms. She has recovered from her infection without apparent sequelae.

REFERENCES

1. Rubright JH, Shafritz AB. The herpetic whitlow. J Hand Surg Am. 2011 Feb;36(2):340-2. doi: 10.1016/j.jhsa.2010.10.014. Epub 2010 Dec 24. PMID: 21186084.
2. Raykova VV. Learning from Mistakes – a Case of Pediatric Patient with Recurrent Whitlow. Folia Med (Plovdiv). 2019 Sep 30;61(3):478-480. doi: 10.3897/folmed.61.e39163. PMID: 32337938.
3. Browning WD, McCarthy JP. A case series: herpes simplex virus as an occupational hazard. J Esthet Restor Dent. 2012 Feb;24(1):61-6. doi: 10.1111/j.1708-8240.2011.00469.x. Epub 2011 Aug 30. PMID: 22296698; PMCID: PMC3437498.
4. Murphy AP, Martin P, Jukka CM, Memon A, Ng SM. Recurrent primary paediatric herpetic whitlow of the big toe. BMJ Case Rep. 2013 Feb 21;2013:bcr2013008598. doi: 10.1136/bcr-2013-008598. PMID: 23436893; PMCID: PMC3604391.

5. Kopriva F. Recurrent herpetic whitlow in an immune competent girl without vesicular lesions. Eur J Pediatr. 2002 Feb;161(2):120-1. doi: 10.1007/s00431-001-0879-3. PMID: 11954749.
6. Szinnai G, Schaad UB, Heininger U. Multiple herpetic whitlow lesions in a 4-year-old girl: case report and review of the literature. Eur J Pediatr. 2001 Sep;160(9):528-33. doi: 10.1007/s004310100800. PMID: 11585074.
7. Walker LG, Simmons BP, Lovallo JL. Pediatric herpetic hand infections. J Hand Surg Am. 1990 Jan;15(1):176-80. doi: 10.1016/s0363-5023(09)91128-5. PMID: 2153722.
8. Lieberman L, Castro D, Bhatt A, Guyer F. Case report: palmar herpetic whitlow and forearm lymphangitis in a 10-year-old female. BMC Pediatr. 2019 Nov 21;19(1):450. doi: 10.1186/s12887-019-1828-5. PMID: 31752766; PMCID: PMC6868856.
9. Betz D, Fane K. Herpetic Whitlow. 2021 Aug 6. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan–. PMID: 29494001.
10. Patel R, Kumar H, More B, Patricolo M. Paediatric recurrent herpetic whitlow. BMJ Case Rep. 2013 Jul 31;2013:bcr2013010207. doi: 10.1136/bcr-2013-010207. PMID: 23904423; PMCID: PMC3736177.
11. Gill MJ, Bryant HE. Oral acyclovir therapy of recurrent herpes simplex virus type 2 infection of the hand. Antimicrob Agents Chemother. 1991 Feb;35(2):382-3. doi: 10.1128/AAC.35.2.382. PMID: 1850971; PMCID: PMC245012.
12. Merchant VA, Molinari JA, Sabes WR. Herpetic whitlow: report of a case with multiple recurrences. Oral Surg Oral Med Oral Pathol. 1983 Jun;55(6):568-71. doi: 10.1016/0030-4220(83)90372-9. PMID: 6576289.
13. Karpathios T, Moustaki M, Yiallouros P, Sarifi F, Tzanakaki G, Fretzayas A. HSV-2 meningitis disseminated from a herpetic whitlow. Paediatr Int Child Health. 2012 May;32(2):121-2. doi: 10.1179/2046905511Y.0000000004. PMID: 22595224.
14. Louis DS, Silva J Jr. Herpetic whitlow: herpetic infections of the digits. J Hand Surg Am. 1979 Jan;4(1):90-4. doi: 10.1016/s0363-5023(79)80113-6. PMID: 759512.

2022 Resident Forum Abstracts

On Friday, September 2, 2022, pediatric residents from throughout the state of Florida gathered for a day devoted to their education at the Pediatric Resident Forum, part of the Florida Chapter of the American Academy of Pediatrics' annual conference: The Future of Pediatric Practice 2022.

In addition to the Florida Resident Brain Bowl, a fun addition to this year's forum was the inaugural SimWars simulation competition between residency programs! SimWars was developed in collaboration with the simulation team at Nemours Children's Hospital. Teams from two of the state's residency program were selected through a live, blind lottery during the conference. Each team was comprised of four residents, each assigned to a specific position and role to play in the simulation. The scenario was presented to each team immediately prior to their turn. The team members talked through their actions while the simulation was broadcast from a camera on the lead resident to a screen in the room for the audience. Following completion of the scenario, the team members received immediate feedback from the panel of judges.

The teams who competed in the inaugural SimWars competition were the University of Miami Jackson Memorial Holtz Children's Hospital, led by Dr. Monica Alba-Sandoval and Dr. Nicole Torres and comprised of Drs. Sarah Sukkar, Priyanka Nair, Dan Pham, and Ugur Balkanci, and the University of Florida Pediatric Residency- Pensacola, led by Dr. Diane Wilkinson and comprised of Drs. Aline Andrucioli, Hemanthi Veligaram, Monica Garcia, and Pallavi Agarwal.

Both teams performed well, successfully completing the simulation. After a careful review of each team's overall performance, the University of Florida Pediatric Residency- Pensacola was named the inaugural FCAAP SimWars Champion. Congratulations to the entire team for their exceptional performance!

Pediatric residents were in the spotlight during the 2022 Resident Brain Bowl! The ever-popular Jeopardy! format quiz competition featured 12 teams from Residency Programs across Florida competing for top honors as the best and brightest. Congratulations to our 2022 Champions, Nicklaus Children's Hospital Residency Program comprised of Drs. Eva Glenn, Daniela Aguilar, Ricardo Vega and Director Dr. Beatriz Cunill-De Sautu! Special thanks to our Brain Bowl Host Dr. Lisa A. Gwynn, Scorekeeper Dr. Jennifer Takagishi, and Judges Drs. Luis Garcia-Chacon, David Hash, D. Paul Robinson, and Sanjeev Tuli.

Rounding out the Pediatric Resident Forum were the Resident Abstract Presentations. FCAAP invited Residents from across Florida to submit original abstracts in one of three categories: Original Research (including advocacy), Quality Improvement Projects, and Case Reports.

On Friday evening, Residents presented their posters and ideas to a panel of distinguished doctors who selected the best presentations in each category for top honors. A total of 3 Original Research, 4 Quality Improvement, and 12 Case Report abstracts were accepted.

Congratulations to all of the resident presenters, especially Dr. Kimberlee Persaud (Best Abstract in Case Report - A Case of Purulent Pericarditis Caused by Haemophilus influenzae in an Unvaccinated Pediatric Patient), Dr. Ayodeji Otufowora (Best Abstract in Original Research - Current opioid misuse among justice-involved children: the effect of adverse childhood experiences), and Dr. Jacqueline O'Donoghue (Best Abstract in Quality Improvement - Increasing class attendance for "All About Baby" prenatal classes by transitioning to a virtual platform at Winnie Palmer Hospital) whose abstracts are included in this edition of *The Florida Pediatrician*.

Special thanks to our poster judges: Drs. Jennifer Takagishi, Lisa A. Gwynn, Nicole Torres, Preceous Jensen, Rana Alissa, Rani Gereige, and Sanjeev Tuli.

Current Opioid Misuse Among Justice-Involved Children: the Effect of Adverse Childhood Experiences

Ayodeji Otufowora, MD, Ph.D.; MPH[1], Piyush Chaudhari, MPH[2]; Micah E. Johnson, Ph.D., MA[3]

[1]Department of Pediatrics, College of Medicine, University of Florida, Gainesville

[2]Department of Epidemiology, College of Public Health and Health Professions, College of Medicine, University of Florida, Gainesville

[3]Department of Mental Health Law and Policy, College of Behavioral and Community Sciences, University of South Florida

ABSTRACT

Aims:

This analysis examines the relationship between adverse childhood experiences (ACEs) and current (past 30-day) opioid misuse among justice-involved children (JICs) and determines whether there is a dose-response relationship between cumulative ACEs and the likelihood of past 30-day opioid misuse

METHODS

This is a secondary data analysis of data collected by the Florida Department of Juvenile Justice (FLDJJ) between 2007 and 2015. We used the chi-square test for independence and the student t-test in our bivariate analysis, and multivariate logistic regression to test the association between ACEs and p30d opioid misuse

RESULTS

The study sample (n = 79,960) was predominantly male (78%) but racially diverse with White (38%), Black (46%), and Hispanic (16%). About 3% report opioid misuse in the past 30 days. Nearly all (97%) had one or more ACEs. There was a dose-response relationship between cumulative ACE score and odds of past 30-day opioid misuse. Compared to individuals with no ACE risk factor, individuals with 2-3, and those with at least 4 ACEs were twice and three times respectively as likely to have misused opioids in the past 30 days. Further, our study showed that males (vs females); Hispanics, and blacks (compared to whites) were less likely to have misused opioids in the past 30 days. We also found a positive relationship between current school enrollment, household income >$35k, anxiety/depression, history of participation in drug treatment programs, low optimism, history of somatic complaints, and past 30-day opioid misuse.

CONCLUSION

ACEs were associated with past 30-day opioid misuse among JICs in a dose-response pattern. Greater efforts (by stakeholders including parents, guardians, juvenile system [via comprehensive prevention programs]) to limit exposure to ACEs would help reduce the risk of opioid misuse. Also, healthcare providers should routinely screen for ACEs during routine well-child visits and then refer to the appropriate social workers when necessary.

ACKNOWLEDGMENT

This study was supported by the Children Miracle Network (CMN) Grant to Ayodeji Otufowora

The authors would like to thank the staff at the FLDJJ for their work in data collection and management

FINANCIAL SUPPORT

This study was supported by Children Miracle Network (CMN) Grant (Ayodeji Otufowora, PI)

National Institute on Drug Abuse [(NIDA award #s 1K01DA052679, R25DA050735 (Dr. Micah Johnson, PI)]. The content of this publication is the sole responsibility of the authors and not the official position of the CMN, NIDA or FLDJJ

Increasing Class Attendance for "All About Baby" Prenatal Classes By Transitioning to a Virtual Platform at Winnie Palmer Hospital

Jacqueline O'Donoghue, MD; Melanie Bui, MD; Lauren Toy, MD; Mariam Zeini, MD
Orlando Health Pediatric Residency at Arnold Palmer Hospital for Children

BACKGROUND AND SIGNIFICANCE

Breast milk is filled with bioactive agents that provide nutritional, cognitive, emotional, and immunological benefits. It has been proven to be a major contributor to the health of both infants and mothers. The American Academy of Pediatrics recommends exclusive breastfeeding for six months. In 2010, pediatric residents developed the monthly All About Baby prenatal class at Winnie Palmer Hospital to educate expecting mothers on breastfeeding. Previous QI data collection has shown rates of exclusive breastfeeding at six months near 80% for mothers after having received this class, significantly higher than the national average of 25% of infants. Prior cycles have also shown that class attendance increased from an average of 4 attendees to 12, after initiating an online registration process. However, class size remained limited by the physical size of the available classrooms at Winnie Palmer Hospital. In addition, the COVID-19 pandemic restricted the number of in-person participants.

AIM

To increase attendance of the All About Baby class by 25% through offering online virtual classes

METHODS/APPROACH

We conducted a quality improvement project to increase attendance at All About Baby by transitioning to a virtual platform. With the help of WPH administration, we expanded our online registration process on the WPH website to automatically email a Microsoft Teams meeting link to parents at the time of registration. During each virtual class, a pediatric resident physician would screen-share the PowerPoint presentation that had previously been used during the in-person classes, discussing each slide in depth. The class curriculum did not change, and the class continued to focus on the benefits of breastfeeding, expectations while in the hospital for delivery, and newborn care. Parents were encouraged to ask questions or make comments live either verbally or via the chat feature throughout the class. Each class lasted around one hour, which was the same duration as previous in-person classes. We collected pre-intervention data from August 2019 to July 2020, and post-intervention data from August 2020 to July 2021.

MEASURES

The primary outcome was attendance after initiation of online virtual classes compared with previous in-person classes offered at Winnie Palmer Hospital.

Results: Pre-intervention, 12 classes were held in-person. Post-intervention, 12 classes were held virtually. Participation after initiation of virtual prenatal classes increased from a mean of 15 mothers per in-person class to 21 mothers per online class. This resulted in a total of 252 participating mothers over a 12-month period, an increase of 37% from 183 mothers in the 12 months prior when classes were only in-person.

CONCLUSIONS

Offering virtual prenatal classes was associated with increased participation rates. We plan to use virtual classes to broaden our population to a wider range of expectant mothers across Central Florida. Our next steps include incorporating safe sleep education and providing a handout to accompany the presentation.

A Curious Case of Haemophilus Influenzae Pericarditis in the Post-HiB Conjugate Vaccination Era

Kimberlee Persaud, MD; Marcelo Egea, MD; Maria Pilar Gutierrez, MD
Memorial Healthcare System Pediatric Residency Program at JDCH

INTRODUCTION

The number of cases of most vaccine-preventable illnesses in the United States declined by more than 90 percent after routine childhood immunizations were introduced. Unfortunately, in recent years, vaccine hesitancy has increased significantly, with parents refusing or delaying their children's vaccinations due to mistrust in the health care system, effectiveness of vaccines, and policymakers who recommend vaccines. Nowadays, there are new medical, religious, and philosophical exemptions that permit parents to make these choices for their children that could ultimately be very detrimental if the child were to contract one of these illnesses. By age 4, children in the USA should have received vaccinations against Hepatitis B, rotavirus, diptheria, tetanus, acellular pertussis (DTAP), Haemphilus influenzae type B (HiB), pneumococcal conjugate vaccine (PCV13), inactivated poliovirus (IPV), seasonal influenzae, measles, mumps, rubella (MMR), varicella, and hepatitis A, however, this is not always the case.

CLINICAL CASE SUMMARY

Our vignette is of a previously healthy unvaccinated 4 year old male who presented to the ER with non-specific respiratory and gastrointestinal symptoms of nasal congestion, cough, fever, sore throat, abdominal pain, and emesis. Upon arrival to the emergency room, patient noted to be ill-appearing, pale, hypotensive, and tachycardic. Physical exam also notable for intermittent grunting with slightly muffled heart sounds. Laboratory evaluation revealed elevated inflammatory markers with CRP > 27 mg/dL (N: <1.00 mg/dL), procalcitonin of 46.74 ng/mL (N: <0.50 ng/mL) and hyponatremia with sodium 122 mmol/L (N: 137 - 145 mmol/L) and otherwise unremarkable CBC, RPP, rapid strep, and urinalysis. Imaging findings showed cardiomegaly on chest x-ray. EKG obtained showed sinus tachycardia with diffuse ST elevations consistent with acute pericarditis. Echocardiogram revealed moderate sized pericardial effusion with normal cardiac function. Patient was started on NSAID therapy and underwent pericardiocentesis performed by interventional cardiologist with successful drainage of 100 cc of purulent/milky effusion. Pericardial drain was left in place and cultures and pathology specimens were sent. Less than 6 hours later, pleural fluid was noted to be growing moderate gram negative bacilli. Irrigation of the pericardial cavity with streptokinase initiated and continued for several days. Ultimately, blood cultures grew gram variable coccobacilli, identified as Haemophilus influenza, beta lactamase negative. Chemoprophylaxsis with Rifampin was prescribed for the entire family and extensive counseling on importance of vaccines provided to family. Patient eventually discharged home with PICC line to complete 4 week antibiotic treatment with IV Rocephin for H. Influenzae pericarditis and bacteremia.

DISCUSSION

Haemophilus influenzae are pleomorphic gram-negative bacilli that commonly colonize and infect the respiratory tract. Among typeable strains, H. influenzae type b (Hib) is the most virulent. In the post-Hib conjugate vaccine era, invasive Hib disease in children <5 years of age is rare, however, it may present with bacteremia, meningitis, and sepsis. In a vaccinated patient presenting with pericarditis and pericardial effusion, the most common cause is usually a viral infection. Bacterial pericarditis, although less common, is associated with a higher mortality rate than viral disease. In an unvaccinated patient such as ours, bacterial pericarditis should jump higher on the differential. This diagnosis can have an unfavorable prognosis especially if not considered early on. Had our patient not had the typical EKG findings of pericarditis, it is possible that his diagnosis may have been missed. He might have been sent home with instructions for supportive care for a presumed viral infection while awaiting the results of his blood and urine cultures. It is important to report cases such as these to remind clinicians that serious illnesses must be considered in unvaccinated patients.

LESSONS LEARNED

In this new era of increasing vaccine hesitancy in the pediatric population, uncommon (and possibly deadly) diagnoses should be considered. It is important to always inquire about vaccination status and broaden our differentials so as not to miss a serious bacterial illness.

2022 Medical Student Research Forum

Rashmin Savani, MBChB; Maria Kelly, MD
University of Florida College of Medicine

The Department of Pediatrics and the University of Florida College of Medicine sponsored the 8th Annual Pediatric Medical Student Research Forum held Saturday, September 3 at Disney's Yacht & Beach Club Resorts during FCAAP's annual conference, The Future of Pediatric Practice 2022.

This was truly a national stage, with more than 70 students from coast-to-coast representing 18 states and Puerto Rico. We were impressed by the superior level of research of the platform and poster presentations. Congratulations to the 2022 Medical Student Forum Winners! The winning abstracts are published in this edition of The Florida Pediatrician journal.

Oral Presentations: First Place, Nikitha Damisetty, University of Missouri Kansas City (not published); Second Place, Myabi Saito, University of Virginia School of Medicine; Third Place, Colton Brown, University of Florida College of Medicine; Third Place, Lauren Aycock, University of Florida College of Medicine

Poster Presentations: First Place, Mharlove Andre, Mass General Hospital for Children (not published); Second Place, Kaylin Beiter, Louisiana State University Health Sciences Center; Third Place, Beau Mansker, Indiana University School of Medicine

Each faculty participant was critical in offering feedback and inspiration to all the medical student participants. We believe that each medical student left the forum inspired to better care for children and challenged to make discoveries that will improve our understanding of pediatric illnesses.

We also extend special appreciation to our sponsors and partners at the University of Florida College of Medicine, Atrium Health Wake Forest Baptist, Society for Pediatric Research, and FCAAP.

SPECIAL THANKS TO THE DEDICATED STUDENT FORUM ORGANIZERS AND 2022 SPONSORS

The University of Florida Department of Pediatrics, Wake Forest Department of Pediatrics, Society for Pediatric Research, and the Florida Chapter of the American Academy of Pediatrics

- Maria Kelly, MD; Professor & Associate Division Chief, General Academic Pediatrics, University of Florida
- Desmond Schatz, MD; Professor, University of Florida Pediatrics
- Lindsay Thompson, MD; Professor of Pediatrics, Enterprise Academic Department Chair, Atrium Health Wake Forest Baptist

SPECIAL THANKS TO OUR STUDENT FORUM JUDGES

Dr. Desmond Schatz; Dr. Jim Wynn; Dr. Molly Posa; Dr. Laura Jacobsen; Dr. Lindsay Thompson (Atrium Health Wake Forest Baptist); Dr. Deb Weiner (Boston Children's Hospital); and Dr. Gene Chen (Orlando Health).

THANK YOU TO OUR STUDENT FORUM KEYNOTE SPEAKER

Dr. Rashmin Savani, Professor and Chair, Department of Pediatrics and Physician-in-Chief, Shands Children's Hospital, University of Florida, for his presentation, "A Life Journey to Prevent Bronchopulmonary Dysplasia."

Prevalence Of Children with Obesity in a Weight Management Program Who Live In Food Deserts in Indiana and Associated Social Determinants Of Health

Beau Mansker[1]; Unai Miguel Andres MS[2]; Shellye Suttles PhD[3]; Sara K. Naramore MD[4]
[1]Indiana University School of Medicine
[2]Indiana University Department of Geography
[3]Indiana University Paul H. O'Neill School of Public and Environmental Affairs
[4]Riley Hospital for Children at IU Health, Division of Pediatric Gastroenterology, Hepatology, and Nutrition, Indianapolis

BACKGROUND & OBJECTIVES

Obesity devastates the health of children in Indiana. Food deserts place youth at increased risk for obesity when there is poor access to fresh produce. This study identifies associated complications of pediatric obesity and social determinants of health in children living in food deserts.

METHODS & ANALYSIS

We conducted a retrospective cohort study to determine prevalence of children with obesity who live in food deserts in Indiana and participated in Riley Hospital for Children's weight management program. 348 children enrolled from September 2018 to October 2022 and data was stored in a REDCap database. US Census data determined food desert status. Descriptive statistics and regression analysis determined associations with food desert status and subject demographics such as age, sex, race and ethnicity, and insurance type.

We evaluated 136 children who had aspartate aminotransferase (AST), alanine aminotransferase (ALT), and hemoglobin A1C (HbA1C) measured at enrollment, and determined associations with food desert status through regression analysis.

218 children completed the Family Nutrition & Physical Activity (FNPA) Screening Tool at enrollment. We determined associations with these behaviors and distance from recreational areas, violent crime rates, population congruence, and food desert status.

RESULTS

79 (22.6%) participants lived in food deserts. 16 (11.7%) children had elevated liver enzymes and lived in a food desert. 10 (7.4%) had prediabetes or diabetes and lived in a food desert.

CONCLUSIONS

This study identifies factors associated with obesity which will innovate prevention and management strategies.

ACKNOWLEDGEMENT

Polis Center at Indiana University Purdue University Indianapolis (IUPUI).

10-Year analysis of 183 Heart Transplants in Pediatric and Congenital Heart Disease

Colton Brown; Mark S. Bleiweis; Giles Peek; Yuriy Stukov; Natura Barnett; Jin Choi; Liam Kugler; Matt Purlee; Omar Sharaf; Anson Wang; Lillian N Zobel; Jeffrey P. Jacobs
Congenital Heart Center, University of Florida

BACKGROUND & OBJECTIVES

We reviewed all 183 patients with pediatric and/or congenital heart disease who underwent heart transplantation from 01/01/2011-12/31/2021 at University of Florida to describe diagnostic characteristics and assess risk factors for mortality.

METHODS & ANALYSIS

We analyzed all patients ≤ 18 years of age at the time of cardiac transplantation (n=158) as well as all patients over the age of 18 at the time of transplantation with the diagnosis of congenital heart disease (n=25). Descriptive analysis was performed.

Univariable Cox proportional hazard model was performed to identify prognostic factors for outcomes over time. The primary outcome was mortality, which was analyzed by Kaplan-Meier survival.

RESULTS

At transplant, patients were in the following age categories:

- 63 (63/183=34.4%) infants (0 days-1 year)
- 95 (95/183=51.9%) children (>1 year<18 years)
- 25 (25/183=13.7%) adults (≥18 years).

Median age of all patients was 7.1 years. Median age of all neonates, infants, and children was 3.9 years. Median weight of all patients was 20.9 kilograms. Median weight of all neonates, infants, and children was 11.95 kilograms.

Estimated one-year and five-year survival is 93.7% (95% CI 90.2-97.4%) and 86.2% (95% CI 80.5-92.2%), respectively.

CONCLUSIONS

Excellent outcomes are expected for patients with pediatric and congenital heart disease undergoing OHT independently of diagnostic characteristics. Previous cardiac surgery, posttransplant mechanical circulatory support, associated comorbidities, including renal and liver dysfunction, and functional univentricular circulation are risk factors for decreased survival.

National Medicaid Insurance Formulary Coverage of Isotretinoin: An Assessment of Potential Disparities in Access to Pediatric Dermatology Healthcare

Kaylin Beiter, PhD*[1]; Alexandra Streifel, MD[2]; Deborah Hilton, MD[2]
****Submitting Author***
[1]Louisiana State University Health Sciences Center, School of Medicine
[2]Louisiana State University Health Sciences Center, Department of Dermatology

BACKGROUND

Prescription rates for Isotretinoin are lower among individuals with Medicaid insurance, indicating that low-income youths and families are less likely to receive this aggressive treatment for severe acne. Structural causes of this disparity are unknown. The objective of this study was to assess state-level differences in Medicaid coverage for Isotretinoin in order to understand geographic disparities that may exist in access.

METHODS AND ANALYSIS

State Medicaid formularies were queried for Isotretinoin coverage. States were categorized according to coverage being preferred, non-preferred, or not listed at all. State-level characteristics including total population, total number of Medicaid-enrolled individuals, racial demographics of enrollees, and state Medicaid expansion status were ascertained from the US Census Bureau and the Kaiser Family Foundation.

RESULTS

Preferred status was significantly associated with larger total state Medicaid population ($p=0.02$), but not with percentage of the state population with Medicaid insurance ($p=0.41$). State Medicaid expansion was not associated with preferred status ($p=0.50$). Preferred status was also associated with a higher percentage of Medicaid-insured individuals with Hispanic ethnicity ($p=0.016$), but not with percentage of Medicaid enrollees who identify as Black ($p=0.45$), White ($p=0.35$), Asian ($p=0.27$), or Multiracial ($p=0.91$).

CONCLUSIONS

While Medicaid insurance status itself has been shown to predict reduced likelihood of Isotretinoin treatment, this barrier does not appear to be exacerbated by institutional factors at the state level. Though additional, confounding factors may still be contributing to disparities in access to Isotretinoin, state-run Medicaid systems do not appear to worsen the known, national disparities in access.

Transgender Healthcare Restrictions and Their Impact on LGBTQIA+ Youth

Lauren Aycock
University of Florida College of Medicine, Gainesville

BACKGROUND

Gender-affirming care (GAC), including puberty blockers and hormonal therapy, has been demonstrated to significantly improve mental health outcomes for transgender and gender diverse (TGD) youth and is recommended by the Endocrine Society, the World Professional Association for Transgender Health, and the American Academy of Pediatrics. TGD youth face internalized gender dysphoria, in addition to external stigma, discrimination, and minority stress that lead to concerning rates of suicidal ideation, attempts, and other negative mental and physical health disparities.

METHODS

By conducting a systematic and qualitative legislative review, I have identified 78 state-level House and Senate bills proposed since the 2017-2018 legislative session that restrict access to GAC for TGD youth, including the Save Adolescents from Experimentation (SAFE) Act, the Vulnerable Child Compassion and Protection Act (VCAP), and Youth Healthcare Protection Act. Common themes among these restrictive bills include felony prosecution for providers, mandatory reporting to parents if a child appears to identify as TGD, protection for providers who conscientiously refuse to provide GAC, and exemptions for disorders of sexual development, among others.

RESULTS

Out of 78 legislative attempts, 71 (91%) have failed, 4 are currently active, and 3 have passed. Based on 2020 election results, 76% of states are in sociopolitical alignment with regard to transgender healthcare restrictions; 21/25 (80%) Republican states have attempted to pass transgender healthcare restrictions, and 17/25 (68%) Democratic states have not. This research demonstrates an urgent need to focus advocacy efforts on sociopolitical ideology in order to reduce health disparities among TGD youth.

Safe Implementation of Evidence-Based Nutritional Rehabilitation for Hospitalized Adolescents with Eating Disorders

Miyabi Saito, BS[1]; Andrew Burns, MD[1]; Kelsey Berry, MD[1,2]; Eva Manthe, RDN, CSP[2]; Julia Taylor, MD[1,2]; Susan Gray, MD[1,2]; Joanne Mendoza, MD[1,2]
[1]UVA School of Medicine
[2]UVA Children's Hospital, Charlottesville, VA

BACKGROUND

Adolescent mental health has worsened internationally during the COVID-19 pandemic. Admissions for nutritional rehabilitation to our pediatric hospital medicine service due to an eating disorder have doubled annually for the last 3 years. Recent data suggest that protocols advancing nutritional support more quickly can be implemented safely.

OBJECTIVE

This study describes our quality improvement (QI) initiative to increase the calories at initiation on hospital day one to at least 1500kcal/day in 40% to 80% of the population by June 30, 2022, without increasing risk of refeeding syndrome, and to implement empiric electrolyte supplementation for all admitted patients.

METHODS

A retrospective review of patients admitted to our children's hospital for nutritional rehabilitation from January 2017 to May 2021 was performed. Our children's hospital is contained within a hospital without a dedicated ED or pediatric psychiatry unit. Baseline demographics, clinical presentation, therapeutic interventions, and outcomes were described (N=49). Our multidisciplinary team compared current practices with best practices to identify opportunities for improvement. Phase 1 outcomes include initiating calories at ≥1500kcal/day and empirically supplementing electrolytes to prevent refeeding syndrome. Safety outcomes include rates of hypophosphatemia/refeeding syndrome, need for nasogastric tube feeding, and length of stay. We used the Model for Improvement to design iterative PDSA cycles to implement interventions, beginning in June 2021, addressing both educational and systemic interventions (N=26, ongoing).

RESULTS

Baseline data showed variability in calories and electrolyte supplementation. Presenting percent median body mass index (%mBMI) was lower during the COVID-19 pandemic, indicating increased severity of malnutrition at presentation. We achieved calories at initiation of at least 1500kcal/day in more than 80% of patients without negatively impacting patient safety. There was no change in time to lowest phosphorus level, or measured level, readmission and NGT placement rates decreased, and empiric electrolyte supplementation was successfully implemented in all patients during the intervention period. Average days until medical stabilization was stable, although overall length of hospitalization was increased during the intervention period. Possible explanations include a statewide higher demand for in-patient treatment facilities or greater degree of malnutrition at presentation.

CONCLUSIONS

Updated evidence-based data stimulated a multidisciplinary team to examine current practice and implement a QI initiative to improve the care of adolescents with an ED without compromising patient safety. PDSA cycles have achieved our initial outcomes of higher starting calories and empiric electrolyte supplementation. We did not adversely affect time to medical stabilization by increasing calories at initiation, despite increased severity at presentation during the intervention period. Next steps will include a high value care approach to reducing unnecessary electrolyte testing and developing a sustainability plan for long-term maintenance of evidence-based practices.

CLINICAL IMPLICATIONS

By practicing more evidence-based standard of care, we aim to improve the care of these vulnerable adolescents without compromising patient safety. With initiation of higher calorie count on admission, we hope to shorten length of stay and ultimately decrease hospital costs.

TEACH BY THE BEACH

PEDIATRIC SYMPOSIUM

NOVEMBER 12-13, 2022

PRESENTED BY:

JOE DIMAGGIO CHILDREN'S HOSPITAL

IN COLLABORATION WITH **BOSTON CHILDREN'S HOSPITAL**

AT DIPLOMAT BEACH RESORT IN HOLLYWOOD, FLORIDA

CME credits available for attendees.

Joe DiMaggio Children's Hospital®

Boston Children's

Where the world comes for answers

Ranked the #1 children's hospital in the nation by *U.S.News & World Report*, eight years in a row.

HARVARD MEDICAL SCHOOL TEACHING HOSPITAL

HOW MUCH ASSURANCE

do you have in your malpractice insurance?

With yet another major medical liability insurer selling out to Wall Street, there's an important question to ask. Do you want an insurer with an A rating from AM Best and Fitch Ratings, over $6.5 billion in assets, and a financial award program that's paid $140 million in awards to retiring members? Or do you want an insurer that's focused on paying its investors?

Join us and discover why our 84,000 member physicians give us a 90+% satisfaction rating when it comes to exceptional service and unmatched efforts to reward them.

Exclusively endorsed by

Florida Chapter of the American Academy of Pediatrics
INCORPORATED IN FLORIDA

The Doctors Company
TDC GROUP