Dear Colleagues,

We are almost to the end of the year. What a year this has been!

Your Florida Chapter of the American Academy of Pediatrics (FCAAP) had another successful annual meeting in Orlando over the Labor Day weekend: The Future of Pediatric Practice 2018. This issue of *The Florida Pediatrician* has content and photographs from the event, but I wanted to touch on a few highlights.

Dr. Madeline Joseph’s term as President ended and Dr. Paul Robinson’s two-year term as President started. Thank you, Madeline and Congratulations, Paul!

Dr. Colleen Kraft, President of the American Academy of Pediatrics (AAP) honored the Chapter by attending and presenting at the meeting.

Dr. Lisa Cosgrove and Dr. Jeffrey Brosco received The Audrey Lincourt Schiebler, FAAP, and Gerold Schiebler, MD, FAAP, Advocacy Award, which is well deserved by both. Congratulations!

The annual meeting again had record participation. The CME content was excellent as usual. The medical student and resident participation was outstanding thanks to the efforts of Dr. Scott Rivkees and Dr. Jose Zayas. The Brain Bowl trivia competition was again a smashing success, and Dr. Sharon Dabrow's enthusiasm for the University of South Florida Team would have carried them to victory no matter how they performed. Congratulations to the University of South Florida Residency Program for winning the Brain Bowl!

The best news of all from the annual meeting was that FCAAP reached its goal of raising $50,000 towards the capital campaign for the new American Academy of Pediatrics Headquarters, and the Florida Chapter will now have a room there named in its honor. Way to go Florida Chapter!!! Congratulations and thank you to all of you who donated.

FCAAP continues to remain active with advocacy and educational activities. We thank all of you for your support.

The AAP Experience National Convention & Expo (aka NCE) is in Orlando, Florida from November 2-6, 2018. We hope to see many of you at this annual meeting, especially since the Florida Chapter will be hosting a luncheon reception on Sunday, November 4 at the conference. Please keep your eyes and ears open for the official announcement and we hope you will join us.

Thank you, All.

Mobeen H. Rathore, MD, CPE, FAAP, FPIDS, FSHEA, FIDSA, FACPE
Professor and Director
University of Florida Center for HIV/AIDS Research, Education and Service (UF CARES)
Chief, Infectious Diseases and Immunology, Wolfson Children’s Hospital Jacksonville
Jacksonville, FL
Editorial Board

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Interested in joining the FCAAP Editorial Committee or submitting an article for a future publication?

Contact the Editorial Committee at info@fcaap.org for more information!

Florida Chapter ——— American Academy of Pediatrics
Anakinra and Tacrolimus for Macrophage Activation Syndrome

Thomas A. Boyle; Whitney Hang, MD; Raymond Fertig, MD; Emanuel Perez, MD, PhD; Patricia Alvarez, M.D.
Department of Pediatrics, University of Miami Miller School of Medicine, Miami, Florida

INTRODUCTION:
Macrophage activation syndrome (MAS) is a feared complication of rheumatic disease. It is a type of secondary hemophagocytic lymphohistiocytosis (HLH) that occurs in the setting of systemic juvenile idiopathic arthritis (sJIA), systemic lupus erythematosus (SLE) or Kawasaki’s disease. The precise etiology remains elusive, but both MAS and its close relative HLH involve the unchecked activation of macrophages and T-cells inducing a cytokine storm with resulting fever, coagulopathies, pancytopenia or shock [1-3].

Historically, the mainstay of treatment for MAS are corticosteroids and cyclosporine [3]. In the last decade, treatment has evolved to include targeted monoclonal antibodies, but data on their use are limited. In a detailed survey of MAS presentation, treatment and outcomes published in 2014, only 15% of patients were treated with a biologic. The same study showed that fewer than 1% of patients received tacrolimus. Here, we present the case of a child with MAS who relapsed multiple times on his home regimen of anakinra plus 2mg/kg solumedrol IV and tacrolimus. She has been followed closely in rheumatology clinic and continues to do well after three months.

CASE REPORT
A previously healthy 6-year-old girl was transferred to our center from an outside hospital with joint pain, abdominal distention and a pericardial effusion following a prolonged course of fever, abdominal pain, sore throat, and weakness.

The patient last felt well during a birthday party at an arcade. Throughout the following week, she complained to her mother of severe abdominal pain. After one week, her symptoms included persistent fever, headache, sore throat, and abdominal pain so severe that she could not walk, so she presented to the emergency department (ED) of a community hospital. In the ED, a rapid strep test was positive and a rapid influenza test was negative. She was discharged with oral antibiotics, which were taken as prescribed.

Three days later, she returned to the ED with complaints of worsening abdominal pain, headache, sore throat, and fever. An abdominal exam revealed marked distention, and she was admitted for further workup. Soon after, the patient became tachypneic with a respiratory rate between 30 and 40 and shallow breathing and she was transferred to the ICU. Despite antibiotic therapy and abdominal decompression, she continued to have fever and developed a pericardial effusion and bilateral pleural effusions. The decision was made to transfer her to our center for further workup and for operative management of the pericardial effusion.

The patient arrived at our academic tertiary care center three weeks after her initial onset of symptoms and 12 days after hospital admission. She remained febrile, tachycardic and tachypneic. An echocardiogram showed a moderate pericardial effusion, leading pediatric surgery to place a pericardial window, which drained 300 cc of bloody fluid.

Her first series of labs from our pediatric ICU demonstrated Campylobacter jejuni in her stool, a ferritin level of 20,000ng/mL and an elevated fibrinogen of 506mg/dL. Over the next four days, ferritin climbed to 31,000ng/mL and fibrinogen dropped as low as 96mg/dL, which raised suspicion for hemophagocytic lymphohistiocytosis and its subset macrophage activation syndrome. A lymph node biopsy, peripheral smear, and bone marrow aspirate were performed. Notably, the bone marrow aspirate showed evidence of hemophagocytosis.

The team made further efforts to confirm and categorize the presence of HLH. The diagnosis was further supported by fever >38.5°C, hemoglobin <6g/dL, fibrinogen <360mg/dL, and substantially reduced natural killer cell function. The presence of serositis, ANA titer 1:40 and presence of polyarthropathy were concerning for underlying SLE or sJIA. The patient also showed neutrophilia, which is rarely seen in pure HLH [4]. For these reasons, the IL-1 antagonist anakinra (5mg/kg), and solumedrol IV (30mg/kg) were initiated.

Within three days of initiating therapy, the patient showed clinical signs of improvement. For the first time since being admitted at the outside hospital, she was able to support her own weight after one week, she was deemed stable enough for transfer to the general pediatric inpatient service.

On the floor, we began to taper her solumedrol and anakinra with the goal of discharge. However, ten days after transferring her to the floor, she spiked a fever and visibly deteriorated. Her clinical course was mirrored by worsening of lab markers, including a peak ferritin of 51,412ng/mL and worsening of her anemia with a hemoglobin of 7.2g/dL. The attempt to taper medications was halted, and she was taken back to the PICU. We resumed IV solumedrol and increased the frequency of anakinra doses. She responded positively to the resumption of aggressive therapy, with the exception of her anemia. She eventually required two units of packed red blood cells.

The second course of steroids and biologics had a similar positive effect and the patient quickly improved. This time, the team initiated a more conservative medication taper and transitioned the patient to oral prednisone rather than discontinuing corticosteroids completely. After 51 days at our center, the patient was discharged on a daily regimen of 2.5 mg oral prednisone and 2mg/kg anakinra.

Exactly one month after discharge, the patient returned to the hospital reporting two days of abdominal pain, scleral icterus, watery diarrhea and vomiting. Exam revealed hepatomegaly, generalized jaundice and cervical lymphadenopathy. Laboratory tests revealed markedly elevated transaminases with AST 3200u/L and ALT 2800u/L as well as total and direct bilirubin of 8.7mg/dL and 7.0mg/dL, respectively. Initial laboratory results were negative for acute hepatitis, EBV, CMV and HHV, making infection an unlikely etiology of her acute liver dysfunction and suggesting a MAS flare. The patient was continued on her home regimen of anakinra plus 2mg/kg solumedrol IV and tacrolimus. Within 12 days of beginning this regimen, transaminases fell below 400 and total bilirubin fell to 2.0. The patient was discharged shortly after on a home regimen of tacrolimus and anakinra. She has been followed closely in rheumatology clinic and continues to do well after three months.

DISCUSSION:
Here we present a case of a severely ill child with MAS treated successfully with steroids, tacrolimus, and the IL-1 antagonist anakinra. Our experience illustrates many of the challenges in identifying and treating MAS, a condition with mortality rates between 20 and 30%[5]. The first step of successful management is prompt identification. In this case, the ferritin >30,000ng/mL immediately raised the suspicion for HLH/MAS. A review from Texas Children’s Hospital reported ferritin >10,000ng/ dL as 90% sensitive and 96% specific for HLH[6]. As shown in Table 1, the diagnostic criteria for HLH and MAS overlap considerably. This case could reasonably have been primary HLH, secondary HLH caused by infection, or a rheumatologic disorder presenting as MAS. Her infections were treated aggressively from the outset. When we elected to treat for MAS, we were acknowledging that the patient’s joint pain, neutrophilia and serositis were concerning for underlying SLE or sJIA.
HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS (HLH)

Diagnosis is established if five of the eight following criteria are met and are not due to malignancy:
1. Fever
2. Splenomegaly
3. Cytopenias in 2/3 lineages in peripheral blood
4. Hypertriglyceridemia (fasting \( \geq 265 \) mg/dl) and/or hypofibrinogenemia (<1.5g/L)
5. Hemophagocytosis in bone marrow, spleen or lymph nodes
6. Low or absent NK-cell activity (according to local laboratory reference)
7. Ferritin \( \geq 500 \) mg/L
8. Soluble CD25 \( \geq 2,400 \) U/ml

OR diagnosis may be established on the basis of molecular genetic testing consistent with HLH.

MACROPHAGE ACTIVATION SYNDROME (MAS)

Diagnosis is established in a febrile patient with known or suspected systemic juvenile idiopathic arthritis or systemic lupus erythematosus and the following:
1. Ferritin \( >684 \) ng/ml and any two of the following:
   1. Platelet count <181 x 10^9/liter
   2. Aspartate aminotransferase >48 u/L
   3. Triglycerides >156 mg/dl
   4. Fibrinogen <361 mg/dl

Table 1: Diagnostic Criteria for HLH and MAS
Adapted from Henter et al. (2006) [11] and Ravelli et al. (2016) [12]

Delays in diagnosis can be fatal for patients as studies suggest that expected survival in untreated patients is less than two months[7,8]. Given that the disease is extremely rare, a high level of clinical suspicion is vital. HLH and MAS should be considered in patients with liver disease, coagulopathies, bone marrow failure, or prolonged unexplained fever.

Treatment regimens for MAS are aimed at the cytokines suspected of initiating the auto-inflammation. Attempts have been made to treat patients with antagonists against IL-1, IL-6 and INF-γ. Anakinra has shown the most promising results, perhaps due to its effects on both IL-1a and IL-1b[9,10]. Only 0.6% of patients received the drug in the largest survey of treatment methods[3]. The decision to use it in this patient was multifactorial. For one, the degree of hepatic injury during her second relapse was concerning for autoimmune hepatitis (AIH). Second, the addition of tacrolimus afforded the opportunity for a steroid-sparing regimen.

Our patient experienced a number of setbacks during therapy related to supportive care. Patients such as this require complex supportive care and benefit greatly from interdisciplinary teams with contributions from general pediatrics, rheumatology, hematology, immunology, surgery, and intensive care.

ACKNOWLEDGMENTS:
Reuven Bromberg, M.D.

REFERENCES
Congratulations to the Members Elected to the 2018-2020 Board of Directors!

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The weekend began Friday with the Pediatric Resident Forum, and the famous Brain Bowl competition where the top pediatric residency programs in the state competed for the coveted title of Statewide Brain Bowl Champion. The day concluded with an Arabian Nights themed Family Fun Night sponsored by the Dairy Council of Florida where guests enjoyed music and dancing, delicious food, a fun scavenger hunt, and pictures with Aladdin & Jasmine, Doctor Mickey, and Doctor Minnie.

Saturday and Sunday brought a packed agenda of timely and educational CME lectures from top leaders in Pediatrics, Luncheon Presentations by Rhodes Pharma and AbbVie, an interactive Exhibit Hall presented by our incredible Partners, the 5th Annual Pediatric Medical Student Forum, and a special awards ceremony where FCAAP installed its new Officers and Board of Directors and named its 2018 Award Winners. Summaries of several of the weekend’s presentations can be found in the following pages of this edition of The Florida Pediatrician.

We hope you will join us August 30 – September 1, 2019 at our new venue: Disney’s Yacht & Beach Club Resorts. See you there!
Chip Hart, Director of Pediatric Solutions, PCC

Chip Hart has spent nearly 30 years consulting with independent pediatric practices around the country and brought to the FCAAP Annual Conference his list of the Five Biggest business Mistakes That Pediatricians Make...and how to address them.

"The biggest challenges that confront you are self-inflicted," said Hart. "That’s right—more than the insurance companies who behave like organized crime, more than the government mandates that force you to click nonsensical boxes in your electronic health record (EHR), and even more than all the ridiculous paperwork and cuts to Medicaid—the most important business problems you face start in your own office.

Too many pediatricians fail to operate like the small service businesses you really are. Being a good, or even great, pediatrician is no longer enough to be a successful pediatrician. During this course, pediatric practice management consultant Chip Hart explained why good independent pediatricians fail to be successful, and how they can get out of the rut.

HOW TO SET YOUR PRICES FAIRLY AND ACCURATELY USING RBRVS

Chip Hart, Director of Pediatric Solutions, PCC

Most independent pediatric practices don’t understand how the Resource-Based Relative Value Scale (RBRVS), or “RVUs,” intimately affect their practices. Relative Value Units (RVUs) are often perceived to be in the Medicare/adult medicine realm and not something pediatricians need to worry about. Nothing could be further from the truth.

Not only do pediatricians need to understand RVUs, they should leverage that understanding to improve their bottom lines, develop fair and accurate measures for productivity, and improve their business ownership acumen to help themselves and their patients.

During this course, pediatric practice management consultant Chip Hart walked us through the easiest explanation of how RVUs relate to our practices and then handed us our own free RVU calculator. Armed with this information, you can compare different payor contracts, set your prices in a fair manner, and use the vocabulary that the experts use to manage their practices.
HOW TO DIAGNOSE AND TREAT THE TOP PEDIATRIC DERMATOLOGY DIAGNOSES
Jennifer Schoch, MD, Pediatric Dermatology, University of Florida

In the first half of the session, we focused on the treatment of atopic dermatitis (eczema). In order to understand treatment, we briefly reviewed the complicated pathogenesis of atopic dermatitis. We then focused on five steps of atopic dermatitis treatment: sensitive skin care, moisturization, treating inflammation, managing microbes, and treating itching (where appropriate). In treating sensitive skin, we discussed avoidance of fragrances and irritants. Moisturization is important to replace and protect the skin barrier, and should be used by patients even when the eczema is clear. The bulk of our conversation focused on treating inflammation – including the debate about appropriate potency and use of topical steroids. Studies evaluating the long-term safety of topical steroids are lacking, and well-designed longitudinal studies are needed. After flares are controlled, intermittent dosing of topical steroids or other topical anti-inflammatory agents (eg. calcineurin inhibitors) has been reported as a safe, effective way to minimize flares. Overgrowth of bacteria (and less commonly, yeast) can contribute to atopic dermatitis flares, and thus strategies such as bleach baths may be helpful in minimizing and controlling flares. Finally, we discussed the high prevalence of dermatographism among children; especially in these children, non-sedating anti-histamines can reduce the pruritus associated with atopic dermatitis flares. For comparison, we contrasted the exam findings typical in seborrheic dermatitis, particularly in infantile seborrheic dermatitis, with infantile atopic dermatitis. In the second half of the session, we turned our attention to acne treatment. Again, we first discussed the pathogenesis of acne. We then contrasted comedonal versus inflammatory acne, and tailored our treatment regimens based on the subtype of acne. The usefulness of acne treatment guidelines were reviewed in this context. The use of retinoid medications was emphasized for comedonal acne, and topical/oral antibiotics were reviewed for inflammatory acne. Strategies to reduce long-term exposure to oral antibiotics were discussed, including hormonal therapy in girls, and optimizing the topical regimen in order to withdraw the oral antibiotic. For comparison, perioral dermatitis was briefly discussed and contrasted to acne.

MOCA-PEDS – THE ABA’S NEW LONGITUDINAL ASSESSMENT AND LEARNING PLATFORM
David G. Nichols, MD, MBA, President and CEO, American Board of Pediatrics

The American Board of Pediatrics has listened carefully to pediatricians and designed a web-based longitudinal learning and assessment platform called MOCA-Peds (or Maintenance of Certification Assessment for Pediatrics) to provide an alternative to the secure examination for MOC.

Since the early 20th century, medical specialties have sought to establish standards that distinguish well-trained physicians who are practicing according to the highest standards from others without those attributes. The rationale for an objective external assessments.

• Questions based on important new practice guidelines
• Repeat questions presented to the diplomate based on an algorithm that utilizes knowledge gaps, relevancy to the diplomate’s practice, and confidence levels in the subject matter

MOCA-Peds assessment platform features open-book questions delivered at quarterly intervals and based on concepts used in everyday practice. The focus is on combining assessment with learning. After submitting an answer, the diplomate receives a rationale for the correct answer, references, peer comparisons, and the opportunity to send comments back to the ABP. All questions, rationales, and references can be saved for future reference in the diplomate’s question library. Because diplomates also indicate their level of confidence in their answers, the ABP is able to give feedback on the percentage of questions answered correctly as a function of confidence level. Questions answered correctly as a function of confidence level. Questions answered with high confidence but incorrectly met a passing standard at the end of the fourth year still have an opportunity to take a secure exam in the fifth year. Of the over 5000 diplomates who participated in the 2017 MOCA-Peds pilot, 93% expressed overall satisfaction with MOCA-Peds and 60% indicated that it had helped them provide better care to their patients. The average score was 78.5% correct. The 2019 edition of MOCA-Peds will feature additional enhancements including:

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UPDATE ON AUTISM SPECTRUM DISORDER: SCREENING, DIAGNOSIS AND MANAGEMENT
Barbara J Howard, MD, Assist. Prof. of Pediatrics, The Johns Hopkins School of Medicine

Definition and Prevalence: 1:55-1:68 US children have an Autism Spectrum Disorder (ASD). DSM-5 criteria for diagnosis of ASD have changed so that 2 key features are needed: persistent deficits in social interaction and social communication and also restrictive or repetitive behaviors (RRB). The requirement of at least 2 RRBs can be met by stereotyped or repetitive motor movements; use of objects or speech, insistence on sameness, inflexible routines; ritualized behavior; or highly restricted, fixed interests that are abnormal in intensity or focus and has been expanded to include hyper or hyporeactivity to sensory stimuli or unusual interest in sensory aspects. Symptoms must be present in the developmental period, cause clinically significant impairment and not be better accounted for by intellectual disability or global developmental delay. Further refinement when making the diagnosis should include known associations and degree of support required for both the RRB and the communication issues.

Early Detection: Early diagnosis of autism is possible for some children as early as 14 months but some children don’t manifest autism until 24 months or shortly thereafter. A full 25-44% appear normal then regress in their 2nd year. The American Academy of Pediatrics continues to recommend using an autism specific screening tool at 18 and 24 months in spite of some weakness in tool development because early intervention can result in improvements in core deficits of autism and social gains are minimal in the early years without it.

Screening: Although there are a few different screeners available, the M-CHAT-R is most often used but, if positive with a score of 3-7 failed items, it is strongly recommended that the Follow Up Interview be performed by the clinician as it can reduce over referrals by 90%. This can be facilitated by automated presentation of the items in the CHADIS online screening system. New data shows that using the quantitative scoring of a combined Q-CHAT and POSI has better statistical accuracy at the important early 18-month age without needing a follow up interview. A method using machine learning promises even better accuracy.

Medical evaluation: Every child with suspected ASD should have a complete physical and neurological exam, Wood’s lamp exam, ferritin, and hearing and vision testing. A 3-generation family history and examination of past PKU testing is also needed. All children with confirmed ASD should have both Chromosomal Micro Array and Fragile X testing plus any other lab testing relevant to specific historical or PE findings when such conditions as thyroid, lead, metabolic or mitochondrial problems are suspected.

The opioid crisis – Pediatrics in Florida
Celeste Philip, MD, MPH, Surgeon General and Secretary, Florida Department of Health
Ashley Booth Norton, MD, FACEP, Director of Operations for Emergency Medicine, University of Florida College Of Medicine- Jacksonville
Hector Vila, Jr, MD, Pediatric Dental Anesthesia Associates and Florida Board of Medicine
Mark Hudak, MD, Chair, Department of Pediatrics at University of Florida, Jacksonville
Heather Flynn, Ph.D, Associate Professor and Vice Chair for Research, Florida State University College of Medicine

As a nation and as a state, we are in the midst of an opioid epidemic that will require a long-term comprehensive strategy to overcome. From 2015 to 2016, there was a 35 percent increase in opioid-related deaths in our state, and in 2016, opioid overdoses contributed to more than 3,000 deaths in Florida.

This panel provided a comprehensive understanding of the opioid crisis in Florida and its impacts on certain populations including expectant mothers, infants, children and adolescents. The panel offered context for the current opioid crisis through historical data analysis. Panelists also highlighted the impact of mental health risk and opioids on maternal and child health and potential prevention and treatment strategies. Finally, the panelists offered insights into the anticipated impacts of recent federal and state legislation related to opioid prescribing and opioid-related health issues.
On Friday, August 31, 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 2018. In addition to the Florida Resident Brain Bowl and Educational Sessions, one highlight was the Simulation Activity made possible by Medical-X where residents were able to practice diagnostic and life-saving procedures on lifelike NENA Sim mannequins programmed with training exercises designed with the professional input of expert physicians.

Rounding out the Pediatric Resident Forum were the Resident Abstract Presentations. Residents throughout (and outside) the state of Florida presented their research, advocacy, and quality improvement work in platform and poster presentations. Congratulations to all of the resident presenters, especially the platform presenters, Dr. Genevieve McKinley (Best Abstract in Research), Dr. Kourtney Guthrie (Best Abstract in Advocacy), and Dr. Nawal Merjaneh (Best Abstract in Quality Improvement and Best Overall Abstract), whose winning abstracts are included in this issue of The Florida Pediatrician. We also extend a huge thank you to all of the faculty reviewers, Drs. Andrea Ali-Panzarella, Amanda Alladin, Patricia Alvarez, Maria Behnam-Terneus, Beatriz Cunill-De Sautu, Sharon Dabrow, Rita Nathawad, Nicole Torres, Jeff Winer, and Jose Zayas, for their time and efforts.

**2018 Pediatric Resident Forum Highlights Top Abstracts from Florida’s Pediatric Residents**

Jeffrey C. Winer, MD, MA, MSHS, FAAP
University of Florida - Jacksonville, Pediatric Hospitalist

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**CONGRATULATIONS 2018 RESIDENT FORUM WINNERS!**

Best Abstract in Quality Achievement and Best Overall Abstract - Nawal Merjaneh

*Role of Donor Milk Supplementation in Newborn Nursery Level 1 in Improving Exclusive Breastfeeding Rate at Six Months of Life*

Nawal Merjaneh1, Patty Williams2, Sandy Inman3, Mandy Schumacher1, Anuta Cmure1, Rana Alissa, MD3, Mark L. Hudak, MD3

1University of Florida – Jacksonville, Jacksonville, FL
**Best Abstract in Advocacy - Kourtney Guthrie**

Uniting Existing Community Resources to Provide Care for Immigrant Children and Their Families

Kourtney Guthrie,1 Diana Montoya-Williams1
1Department of Pediatrics at the University of Florida

**Best Abstract in Original Research - Genevieve McKinley**

Association between Duration of Hemodynamically Significant PDA (hsPDA) and Bronchopulmonary Dysplasia (BPD) in Extremely Preterm Infants

Genevieve McKinley, Hussnain Mirza, Jorge Garcia, XueKai Shi, Laura Hubbard, Ariana Franco, Wendla Sensing, Jordan Schneider, Julie Pepe, William Oh
1Florida Hospital for Children

ASSOCIATION BETWEEN DURATION OF HEMODYNAMICALLY SIGNIFICANT PATENT DUCTUS ARTERIOSUS AND BRONCHOPULMONARY DYSPLASIA IN EXTREMELY PRETERM INFANTS

Hussnain Mirza,1 Jorge Garcia,2 Genevieve McKinley,1 Laura Hubbard,1 Ariana Franco,2 Wendla Sensing,1 Jordan Schneider,1 Julie Pepe1 William Oh1 and Rajan Wadhawan1

Affiliation:
1Department of Pediatrics at the University of Florida
2Department of Pediatrics. Florida Hospital for Children. Orlando, Fl.

OBJECTIVE:
To describe a simple scoring system to identify hemodynamically significant patent ductus arteriosus (hsPDA) and demonstrate that duration of hsPDA is associated with higher risk for bronchopulmonary dysplasia (BPD).

METHODS:
All preterm infants (<29 weeks) treated in our Neonatal ICU from January 2013 to March 2016 were included if PDA status was confirmed at <7 days of life. Using the routinely available echocardiographic and clinical parameters, a simplified scoring system was developed to identify hsPDA. Infants with genetic syndromes, complex congenital anomalies and hemodynamically insignificant PDAs were excluded. Serial echocardiograms were reviewed to estimate the hsPDA duration. Study cohort was divided into 4 groups based on the duration of hsPDA. Group A-No PDA, B-hsPDA <1-week, C- hsPDA 1-2 weeks and D-hsPDA >2 weeks. ANOVA was performed to compare demographic and clinical characteristics. Logistic regression was performed to adjust for relevant covariates.

RESULTS:
There were 147 infants with no PDA (group-A), 50, 35 and 41 infants were enrolled in group B, C and D respectively. There were no differences in maternal age, race, diabetes, illicit drug abuse, antenatal steroids use, apgars or small for gestational age (SGA), appropriate for gestational age (AGA), large of gestational age (LGA), newborns bathed in the first hour [infants of mothers with hepatitis C virus (HCV), hepatitis B virus (HBV), chorioamnionitis], insurance type (Medicaid, private or none) and Women, Infant and Children program (WIC) participation. Magnitude of effects were described using odds ratios (OR), along with their 95% confidence intervals (CI).

CONCLUSION:
In extremely preterm infants, hsPDA can be identified by a simple scoring system and the longer duration of hsPDA is associated with higher risk for death or BPD.

Want to present your research next year? Visit fcaap.org/events for submission information.

**ROLE OF DONOR MILK SUPPLEMENTATION IN NEWBORN NURSERY LEVEL 1 IN IMPROVING EXCLUSIVE BREASTFEEDING RATE AT SIX MONTHS OF LIFE**

Nawal Merjaneh, M.D. Patty Williams, ARNP, Sandy Inman, IBCLC, Mandy Schumacher, RN, Anuta Cirute, RN, Rana Alissa, M.D., Mark L. Hudak, M.D.

BACKGROUND AND AIM:
Despite the American Academy of Pediatrics' (AAP) endorsement of the Baby Friendly Hospital Initiative ten steps to optimize breastfeeding, a percentage of newborns in the level one nursery end up using formula for medical reasons including hypoglycemia, hyperbilirubinemia, weight loss greater than 8% and ineffective breastfeeding. Improving exclusive breastfeeding rates requires efforts in initiating exclusive breastfeeding in the postpartum hospital stay. Therefore, we introduced donor milk to newborns who needed nutritional supplements for medical reasons. We aimed to determine the benefits of Pasteurized Donor Human Milk supplement in improving the exclusive breastfeeding rate at six months after discharge.

METHODS:
We retrospectively reviewed 3030 neonates admitted between June- Sep of 2015 and Jan- Oct of 2016 in our level 1 newborn nursery. The supplementation of breastfeeding with donor milk was implemented in October of 2015. All neonates requiring supplementation of breastfeeding were offered donor milk and mothers have consented and signed for it.

RESULTS:
122 neonates required nutrition supplement for medical reasons. Of those, 73 (60%) had formula and 49 (40%) had donor milk as supplementation for hypoglycemia, hyperbilirubinemia or weight loss>8%. We defined exclusive breastfeeding from the time of discharge. The outcome was: post discharge exclusive breastfeeding rates at 6 months of life. The data on breastfeeding duration after discharge was collected through phone calls. Multiple logistic regression with backward variable selection method was used to control for potential confounders including gestational age (term, preterm), maternal age (<20, 20-35, >35 years old) and race (white, black, Hispanic, others), delivery type (vaginal, Caesarean Section(CS)), birth weight (small for gestational age (SGA), appropriate for gestational age (AGA), large of gestational age (LGA)), newborns bathed in the first hour (infants of mothers with hepatitis C virus (HCV), hepatitis B virus (HBV), chorioamnionitis), breastfeeding duration after discharge was collected through phone calls. Multiple logistic regression with backward variable selection method was used to control for potential confounders including gestational age (term, preterm), maternal age (<20, 20-35, >35 years old) and race (white, black, Hispanic, others), delivery type (vaginal, Caesarean Section(CS)), birth weight (small for gestational age (SGA), appropriate for gestational age (AGA), large of gestational age (LGA)), newborns bathed in the first hour (infants of mothers with hepatitis C virus (HCV), hepatitis B virus (HBV), chorioamnionitis), insurance type (Medicaid, private or none) and Women, Infant and Children program (WIC) participation. Magnitude of effects were described using odds ratios (OR), along with their 95% confidence intervals (CI).

CONCLUSION:
39 of the 73 (54%) families in the formula group and 33 of the 49 (40%) in the donor milk group were contacted. There were no significant differences in the baseline characteristics between the donor milk and formula groups except WIC program participation (44% vs 8%, p=0.001). Adjusting for delivery type (p=0.007) and WIC (p=0.026), newborns after donor milk implementation in our nursery had five times greater odds to be exclusively breastfed at six months of life [adjusted OR=5.13, 95%CI (1.37, 19.23), p=0.015]. Moms who had CS or who were WIC participants had higher odds to breastfeed at 6 months of life [adjusted OR=11.48, 95%CI 1.97, 66.78] and (adjusted OR=4.59, 95%CI 1.20, 17.54), respectively.

CONCLUSION:
Implementation of donor milk supplementation significantly improved the post discharge exclusive breastfeeding rate at 6 months of life in our nursery.

Want to present a poster at the 2019 Pediatric Resident Forum? Visit fcaap.org/events for submission information.
The 5th annual national Pediatric Medical Student Research Forum was held September 1, 2018 during the Florida Chapter of the American Academy of Pediatrics’ annual conference: The Future of Pediatric Practice 2018. This event brought together 70 medical students from across the United States, to present exciting science related to the pediatric issues.

Medical student presentations included talks focusing on brain tumors, public health, and epidemiology, and addressed the discovery of novel genetic conditions, case series, and important historical perspectives of medicine. Many of the winning abstracts presented orally and by poster at the forum are included in this edition of The Florida Pediatrician for your review.

The forum also featured a keynote address by Dr. Sonja Rasmussen, formerly of the Center for Disease Control, and now at the University of Florida, focusing on emerging viral pathogens ranging from Ebola to Zika.

This forum is the only such event in the United States that brings together medical students focusing on pediatric-related research. Having completed its 5th year, 400 students have now participated in this special event. This event is sponsored by Boston Children’s Hospital, NICHD, and the University of Florida. Going forward, the national Medical Student Research Forum is pleased to announce the Society for Pediatric Research as a new sponsor. Congratulations 2018 student forum winners!

ORAL PRESENTATIONS

First Place - Sze Kiat Tan
CK1δ-BRD4 Pathway as Novel Therapeutic Target for SHH Subtype of Medulloblastoma
Sze Kiat Tan1, Clara Penas1, Cheng-Ming Chiang1, David Robbins1, Nagi Ayad1
1Sylvester Comprehensive Cancer Center, Center for Therapeutic Innovation, University of Miami, Miami, FL

Second Place - Massiel Montes de Oca
Using Key Informant Interviews to Assess Pediatricians’ Experiences Following the Implementation of a Brief ACE Screener
Massiel Montes de Oca MPH MS, Justin Hendricks PhD, Lindsay Thompson MD MS
1 Department of Pediatrics at the University of Florida, 2 Institute for Child Health Policy at the University of Florida

USF Residents Enjoy ‘Brain Bowl’ Victory

Submitted by Sharon Dabrow, MD, Professor and Residency Director University of South Florida Health, Morsani College of Medicine

The “USF Bulls” enjoyed a preseason win in late August when resident physicians captured first place in the Pediatric Brain Bowl at the 2018 meeting of the Florida Chapter of the American Academy of Pediatrics (FCAAP) in Orlando.

The team of pediatric residents Carissa Simone, Alex Howard and Matthew Gates plus medicine-pediatrics resident Mahad Mohammad correctly answered tough questions in the competition’s early rounds, which included pediatric residency programs from across the state. They advanced to the final round for a resounding win over UF-Jacksonville, Florida Hospital and University of Miami, earning 2300 points and successfully answering the final question about new AD guidelines issued by the AAP (answer: AD = adolescent depression).

Program director Dr. Sharon Dabrow and coordinator Kelly Paulina were there to cheer the USF Bulls on, along with Dr. Patty Emmanul, chair of the USF department of pediatrics.

As part of their training, the USF residents provide patient care at JHACH during rotations in the pediatric medicine unit, emergency room, PICU and subspecialty services (i.e., nephrology, pulmonology and gastroenterology). USF medical students are partnered with residents on these services and can choose additional electives at JHACH.

“Many of the physicians at JHACH, myself included, were trained through the USF pediatric residency program,” says Dr. Shaia Siraj, a pediatric hospitalist who serves as liaison to USF program. “The core values have always revolved around providing excellent clinical care and the hardworking, compassionate residents are the backbone of the program. At JHACH, the residents are able to experience a wide variety of medically complex and diverse patient populations, while actively participating in safety and QI initiatives.”

Congratulations to the residents on their Brain Bowl success!
Second Place – Elsie Ennin

**Poster Presentations**

*First Place – Elsie Ennin*

**Characteristics Of Patients with Neurocutaneous Melanosis. The Memorial Sloan Kettering Cancer Center Experience from 2003-2018**

E. Ennin; Patel A; De Braganca KC; Haque S; Marghoob AA; Reyes-Múgica M; Rosenblum MK; Khakoo, Y.

1 Department of Pediatrics, Memorial Sloan Kettering Cancer Center, New York, NY, USA, 2 Department of Neurology, Memorial Sloan Kettering Cancer Center, New York, NY, USA, 3 Department of Surgery, Memorial Sloan Kettering Cancer Center, New York, NY, USA, 4 Department of Pathology, University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 5 Department of Pathology, Memorial Sloan Kettering Cancer Center, New York, NY, USA, 6 Department of Pediatrics, Weill Cornell Medical College, New York, NY USA

**Second Place – Jennifer Loso**

**Prospective Surveillance Study of Antimicrobial Utilization in Hospitalized Children**

Jennifer Loso1, BS; Christopher Campbell1, PharmD; Matthew C Washam1, MD MPH

1 Medical Student, University of Florida College of Medicine, 2 UF Health Shands Children’s Hospital, Division of Pharmacy, 3 UF Health Shands Children’s Hospital, Division of Pediatric Infectious Disease

**Third Place – Amanda Pitre**

**Improving Maternal and Infant Screening Practices for Zika Virus Using Quality Improvement Methodology**

Amanda Pitre, BS; Maya Balakrishnan, MD, CSSBB 2; Reed Ryan, APRN; Karen Fugate, MSN RNC-NIC, CPHQ; Mavel Gutierrez-Jaramillo, MD; Stephanie Ros, MD, MSCF; Danielle Brennan, BSN, RNC; Patricia Emmanuelli, MD.

1 College of Medicine, University of South Florida, Tampa, Florida, 2 College of Medicine, University of South Florida, Tampa Florida, 3 Neonatal Intensive Care Unit, Tampa General Hospital, Tampa, Florida, 4 College of Medicine Obstetrics and Gynecology, University of South Florida, Tampa Florida, 5 Labor and Delivery, Newborn Nursery, Tampa General Hospital, Tampa Florida

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**SPECIAL THANKS TO THE DEDICATED ORGANIZERS AND TO THE 2018 SPONSORS, UNIVERSITY OF FLORIDA, BOSTON CHILDREN’S HOSPITAL, AND NICHD.**

- Scott A. Rivkees, M.D Professor and Chair, Department of Pediatrics, University of Florida
- Maria Kelly, M.D. General Pediatrics, University of Florida
- Debra Weiner, M.D., Ph.D. Pediatric Emergency Medicine, Boston Children’s Hospital
- Maya Lodish, MD, MHS; The Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), National Institutes of Health

**Second Place – Oral Presentation**

Massiel Montes de Oca, MPH, MS - Department of Pediatrics at the University of Florida

**Using Key Informant Interviews to Assess Pediatricians’ Experiences Following the Implementation of a Brief ACE Screener**

Massiel Montes de Oca MPH MS, 1 Justin Hendricks PhD, 1 Lindsay Thompson MD MS 1,2

1 Department of Pediatrics at the University of Florida
2 Institute for Child Health Policy at the University of Florida

**Background**

The American Academy of Pediatrics encourages routine screening for social/emotional, family and/or community factors that impact a child’s physical and emotional health. Yet currently there are no standardized tools endorsed for Adverse Childhood Events (ACEs) screening. Previous studies cite a lack of provider time and confidence in asking myriad questions as potential barriers to ACE screening in practices. However, preliminary analyses of a national dataset suggest that two ACEs (income instability and parental/caregiver divorce/separation) are statistically sensitive and specific predictors of childhood emotional, behavioral or mental (EMB) problems. Consequently, a brief two-question screener was embedded into patients’ electronic health records (EHRs) as part of a six-month pilot project of well care at one university-based health system in North Central Florida. The purpose of this qualitative study is to gather and assess information on providers’ experiences addressing ACEs prior to and during the implementation of the EHR-based screener. It specifically aims to assess the ease of use for physicians and determine barriers to use.

**Methods**

Following IRB approval of the study interview guide and protocol, we conducted semi-structured key informant interviews with pediatricians at various clinic sites. The interviewer contributed to the development of the interview guide and was trained in interviewing techniques. We identified possible participants through the census of one general pediatric division and ultimately recruited participants via word of mouth, email, and snowball sampling. Interviews were audio recorded and professionally transcribed and de-identified. Prior to interviews, we developed a deductive codebook based on existing literature to organize initial data collection. We then line by line coded the first three transcripts to build inductive codes and finalize the study code book. So far 14 interviews have been conducted and data collection is ongoing. We are applying the finalized code book to the remaining interviews and using Braun and Clarke’s thematic analysis methodology to analyze transcripts.

**Results**

Participants’ experiences and anecdotes have elucidated various challenges and benefits associated with using a brief EHR-based ACE screener. Preliminary data analysis reveals emerging themes that explore providers’ strategies for addressing ACEs, their desire to have more time with their patients, and their advocacy for increased resources to support families in need. Themes associated with logistical barriers center around the differences in clinic flow across practice sites, screening availability. The dissemination of information related to changes in screening availability. Furthermore, providers who participated in an optional Maintenance of Certification involving the screener’s implementation were more aware of strategies to improve screening uptake at their clinics.

**Conclusion**

Overall, this qualitative study reveals most providers believe using a 2-question simplified ACEs screener via the EHR is a time-efficient means to assess the status of ACEs among patients despite technological or logistical barriers. Follow-up studies should explore differences in clinic flow and screener administration across practices and subsequent completion and follow up rates.
Comprehensive Clinical and Molecular Analysis of Pediatric Thalamic Glioma

Danielle Steinberg, MD Candidate 2, Courtney W. Johnson, MD, Madhuri Kambhampati, MS, Erin Bonner, PhD Candidate 2, Adam Resnick 1,2 and Javad Nazarian PhD, MSc 1,2

1Children's National Health System, Center for Genetic Medicine Research, Washington, DC
2Florida Atlantic University College of Medicine, Boca Raton, FL
3The George Washington University of Health Sciences, Washington, DC
4Children's Hospital of Philadelphia, 6567, Neurosurgery, Philadelphia, Pennsylvania, United States
5The Childhood Brain Tumor Tissue Consortium, Children's Hospital of Philadelphia, Philadelphia, PA

Background

Thalamic gliomas are rare pediatric cancers and are associated with poor outcomes. Thalamic gliomas may be unilateral, involve both thalami (bithalamic), or be metastatic spread from other brain areas. The recent discovery of a point mutation in histone 3 [H3.3K27M] has led to the 2016 WHO classification of diffuse midline glioma H3.3K27M mutant, which can include thalamic gliomas. The presence of the H3.3K27M mutation is associated with a poorer prognosis, but little is understood about how this mutation affects downstream genetic expression in thalamic gliomas. Such modifications could in turn drive the pathogenesis of these incurable pediatric cancers.

Hypothesis

The presence of H3.3K27M leads to worse clinical outcomes including tumor progression and overall survival.

Methods

Patient: Our cohort consists of 197 patients: 103 primary tumors, 24 with tumors extended into thalamus, 26 bithalamic tumors (13 primary and 13 extended tumors) using Cavatica and CBTTC portals.

Immunohistochemistry: We used H3.3K27M Abcam antibody to confirm mutation status of our patient samples collected at Children's National. All patient samples were collected under IRB (1339, 747) according institutional guidelines.

Results

Bithalamic tumors and monothalamic tumors
Primary thalamic tumors and midline gliomas that extend into the thalamus

Conclusions

Whole genome sequencing and DNA methylation studies will be performed to divide thalamic gliomas into molecularly distinct subgroups. If unique driver mutations or tumor markers are identified, such aberrations could be used as targets for precision medicine to treat these incurable pediatric tumors.

Comprehensive Clinical and Molecular Analysis of Pediatric Thalamic Glioma

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1Children's National Health System, Center for Genetic Medicine Research, Washington, DC
2Florida Atlantic University College of Medicine, Boca Raton, FL

Conclusions

The presence of H3.3K27M had decreased survival compared to HGG wild type (p<0.0001). Patients with H3.3K27M mutation had decreased survival compared to wild type (p<0.0001). Patients with high grade glioma (HGG) K27M had decreased overall survival than HGG wild type (p<0.0001), and low grade glioma K27M was not significantly different from HGG wild type. There was no significant difference in extended compared to primary tumors (p=0.87).

SECOND PLACE – ORAL PRESENTATION

Jennifer Loso, BS - Medical Student, University of Florida College of Medicine

Prospective Surveillance Study of Antimicrobial Utilization in Hospitalized Children

Jennifer Loso1, BS; Christopher Campbell1, PharmD; Matthew C Washam1, MD MPH

1Medical Student, University of Florida College of Medicine
2UF Health Shands Children's Hospital, Division of Pharmacy
3UF Health Shands Children's Hospital, Division of Pediatric Infectious Disease

Introduction

Antimicrobials are some of the most commonly used medications in pediatric hospitals, and at times are overused. The overuse of antimicrobials, including the increasing use of broad spectrum antimicrobials when no pathogen is identified, and the increasing emergence of multidrug resistant organisms is now a national health concern. Antimicrobial stewardship programs are important for the appropriate use of antimicrobials in the hospital and can help to slow the development of antimicrobial resistance.

Aim

Antimicrobial use at UF Health Shands Children’s Hospital has not been well studied. The aims of this quality improvement project are to evaluate the indications for use of select broad-spectrum antibiotics at the Children’s Hospital, identify the clinical scenarios in which empirical use extends beyond 72 hours, and identify antimicrobial stewardship interventions to improve appropriateness of use.

Methods

This quality improvement project was approved by the Quality Improvement Project Registry associated with UF Health. The antimicrobials to be tracked throughout the pediatric hospital included vancomycin, cefepime, linezolid, meropenem, and piperacillin/tazobactam. Each day, a report was generated through the electronic medical record (EMR) to capture new orders of these antibiotics. Information was collected regarding the pediatric unit, length of stay, antibiotic dose/frequency, and the cultures obtained for each patient on the chosen antibiotics. The type of therapy was documented as either empirical, prophylactic, or targeted. In the subsequent days, patients were followed and information was collected on culture results and modifications to antibiotic orders. If empirical therapy continued beyond 72 hours, rationale for continuing was documented if available. If empirical therapy was discontinued and targeted therapy started, information on the new targeted therapy was collected.

Results

A preliminary data analysis included 45 patients in the UF Health Children’s Hospital of which antibiotics were initiated in 13 (29%) patients for prophylaxis and 32 (71%) patients for empirical treatment of a suspected infection. Of those given empirical antimicrobials, therapy was narrowed at 72 hours from culture collection in 24 (75%) patients. Empirical antimicrobials continued beyond 72 hours in the remaining 8 (25%) patients. Continuation of empirical therapy occurred in cases of culture negative sepsis (6 patients) and in 2 cases where the indication was not documented. Vancomycin (24 patients) was the most frequently utilized antibiotic followed by piperacillin/tazobactam (21), cefepime (15), linezolid (4), and meropenem (1). The pediatric infectious disease team was consulted in 9 of the cases.

Conclusion

These data are helpful for understanding antimicrobial use at UF Health Shands Children’s Hospital. While many cases of broad-spectrum antibiotic use were narrowed at 72 hours, there are still cases where narrowing or discontinuing the antimicrobial therapy did not occur. Future directions of this project will include creation of antimicrobial stewardship interventions to help standardize practice and provide guidelines for extended broad-spectrum antibiotic utilization.

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Conclusion

These data are helpful for understanding antimicrobial use at UF Health Shands Children’s Hospital. While many cases of broad-spectrum antibiotic use were narrowed at 72 hours, there are still cases where narrowing or discontinuing the antimicrobial therapy did not occur. Future directions of this project will include creation of antimicrobial stewardship interventions to help standardize practice and provide guidelines for extended broad-spectrum antibiotic utilization.
THIRD PLACE – POSTER PRESENTATION

Amanda Pitre, BS - Morsani College of Medicine, University of South Florida

Improving maternal and infant screening practices for Zika Virus using quality improvement methodology

Amanda Pitre, BS1; Maya Balakrishnan, MD, CSSBB2; Reed Ryan, APRN2; Karen Fugate, MSN RNC-NIC, CPHQ2; Mavel Gutierrez-Jaramillo, MD2; Stephanie Ros, MD, MSCI2; Danielle Brennan, BSN, RNC2; Patricia Emmanuel, MD2.

1Morsani College of Medicine, University of South Florida, Tampa, Florida
2College of Medicine Pediatrics, University of South Florida, Tampa, Florida
3Neonatal Intensive Care Unit, Tampa General Hospital, Tampa, Florida
4College of Medicine Obstetrics and Gynecology, University of South Florida, Tampa, Florida
5Labor and Delivery; Newborn Nursery, Tampa General Hospital, Tampa, Florida

Introduction

Only 20% of pregnant women infected with Zika are symptomatic with approximately 10% of exposed infants developing Congenital Zika Syndrome. The spectrum of Congenital Zika Syndrome is not fully defined, but it can have devastating consequences. Despite low prevalence, there is continued transmission of Zika. Florida is one of three states that has had endemic Zika cases, which require full evaluation and long-term follow-up. There is poor compliance with standardized screening and documentation of Zika exposure in pregnant women and infants at Tampa General Hospital (TGH). We hypothesize that adherence to Zika policy recommendations, documentation of maternal screening, use of Zika order set, and validation of head circumference will improve appropriate screening and management of Zika virus exposure by >50% in pregnant women and infants delivered at TGH by 2/2019.

Methods

We formed a multidisciplinary team including obstetrics, pediatrics, neonatology, nursing, midwifery, and pediatric infectious disease. We will use the IHI QI model of multiple Plan-Do-Study-Act (PDSA) cycles to develop change strategies. Key drivers identified were standardizing inpatient management of Zika, improving communication between healthcare providers, and providing education. Project scope included the time a pregnant woman is admitted to TGH for potential delivery until determination of the infant’s head circumference. Based on a delivery census of 5,200 births/year, 32 medical records/week were reviewed. Detailed case reviews are performed on any mother or infant with identified missed opportunities for Zika evaluation. PDSA cycle 1 (5/15/2018-present) focused on standardizing screening and management through education and development of a hospital policy for Zika exposed pregnant women and infants. PDSA cycle 2 (6/1/2018-present) focused on compliance with maternal screening through education and electronic medical record tools. PDSA cycle 3 (6/15/18-present) focused on establishing an order set for standardized infant and maternal testing.

Results

While 56% (n=72) of pregnant women were screened, there was 0% compliance with documentation of inpatient maternal or infant inpatient screening at baseline (5/1/2018-5/31/18). We also report that our Zika screening is inadequate in addressing potential exposure through sexual partners and Zika symptoms. Women with international travel during pregnancy were not asked follow-up questions to determine necessity of maternal or infant testing. These opportunities have been addressed in PDSA cycle 2. Case reviews identified missed opportunities for maternal testing (n=1), infant testing (n=2), infant evaluation (n=2).

Conclusion

Our multidisciplinary team’s efforts to improve quality and consistency of care for Zika-exposed pregnant women and infants using standardized screening and management, improved communication between healthcare providers, and education are ongoing.

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