

Fall 2023

The Perspective

A quarterly newsletter published by the National Med-Peds Residents' Association in collaboration with the Med-Peds Program Directors Association & the AAP Section on Med-Peds

What's Inside

1 // 2023-2024 Executive Board

2 // President's Letter

3 // From the AAP-SOMP

4 // E-Board Spotlights – Sneak Peek

5 // 2023 Conference Highlights

9 // Program Spotlights

12 // Essays / Poems

18 // Cases

24 // NMPRA Notes

2023-2024 Executive Board



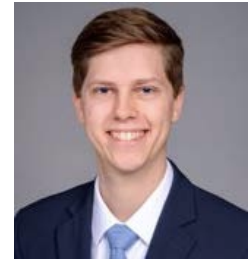
President
Stephanie Lee



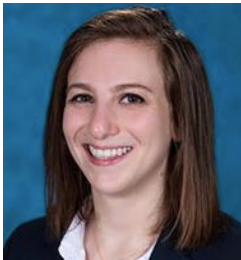
President-Elect
Lawrence Rolle



Past President
Maria Siow



Treasurer
Robert Wendroth



Secretary
Hayley Malkin



PR Secretary
Diane Choi



Webmaster
Elizabeth Batista



MPAC Liaison
Juhi Ramchandani



Dir Community
Service/Outreach
Amara Davidson



Dir Recruitment/
Med Students
Arlene Ho



Dir Health
Policy/Advocacy
Max Deng



Dir Professional
Advancement
Jaimie Rogner



Dir Community
Service and
Outreach
Kelly Spence



Dir-Elect DEI
Subcommittee
Michelle Munyikwa

President's Letter

Dear Med Peds Family,

Happy holidays to our extended work family! I hope that despite how busy everyone's lives are right now, you still are making time in your life to enjoy being with your loved ones, eating some really good food, and continuing to work to bring hope and peace into not just your patients' lives, but also your own.

To our colleagues who have just matched into a fellowship, a huge congratulations to you! To the students who are in the midst of interview season hoping to get a coveted Med-Peds position, we're rooting for each and every one of you and hope to see you in a residency in the Fall. And to everyone who is currently busy taking care of our winter season patients, we see the hard work you put in and we appreciate all that you do.

We had an amazing national conference in Washington DC, and I would like to give a warm shout out to our phenomenal speakers, our amazing attendee audience for making the trip to DC to join us, and finally, to the NMPRA exec for running around all weekend (some people on very little sleep or slightly groggy from a flipped sleep schedule) to make sure the weekend was fun for everyone. We had an absolute blast!! This issue of Perspectives is special as I know our Public Relations Secretary, Diane Choi, took some time to make sure our event was well-documented for those of you that missed the conference.

While I hope that everyone has time off in the next few weeks, I do realize and want to acknowledge that we are all impacted and affected by what goes on in our larger community and most notably wars in the Middle East and Europe. I think everyone in our community knows someone who has been impacted by these events, and it is very hard to miss the news and rising death counts that are popping up routinely on the news and social media feeds. NMPRA wants to continue to provide safety and support to our Med-Peds community during this time, and we are open to suggestions on how to facilitate that support. In the meantime, despite these hard and difficult times we have been living in, thank you for still making the time and taking the effort to care about patients, both young and old, and from every walk of life.

Best regards,

Stephanie Lee, MD
Internal Medicine-Pediatrics | PGY-4
University of Miami/Jackson Health Systems
President | National Med-Peds Residency Association

A Message from AAP-SOMP



From the AAP Section on Med-Peds (AAP-SOMP).

It was inspiring to be in Washington DC for the National AAP meeting and to see a lot of Med-Peds residents attending the NMPRA conference. Many clinicians participated in the white coat rally on the U.S. Capitol Complex to advocate for child health policy issues. The Physician Wellness booth was buzzing with activity as people spun the Domains of Wellness wheel, learned about the various tools and apps, and took home colorful #1 Pediatricians crowns. Our Joint program with the Section on Simulation and Innovative

Learning Methods provided updated information on telehealth practices and best practices for use of social media in networking and advocacy as well as an introduction to ChatGPT and podcasting. For the poster presentations, we wish to congratulate the winners.

ACP 2024 will be April 18-20 in Boston! Early bird registration will be open soon (annualmeeting.acponline.org). The Section on MedPeds is excited to present our educational session on "Primer on Eating Disorder in Adolescents and Young Adults" which will include a discussion on the screenings and assessments, implicit biases, interventions and resources, and complications.

Finally, the Section is continuing our work with NMPRA and MPPDA on DEI, including participating at SNMA and LSMA annual meetings. The Section on MedPeds continues to work hard and looks forward to our continuing collaboration and partnership with NMPRA and MPPDA to engage and address topics of interest to all Med-Peds.

#MedPeds4Life,

Jayne

Jayne Barr MD MPH
Chair, AAP Section on Med-Peds

E-Board Spotlights – Sneak Peek



Name: Arlene Ho, PGY2

Name of Program: Loma Linda

Hometown: Orange County, California

NMPRA Position: Director of Recruitment and Medical Students

Q: What brought you to Med-Peds?

A: Med-Peds was very attractive to me because I wanted to take care of people of all ages and all populations, so it was the most obvious choice for me as a specialty. And I also felt like Med-Peds people were “my people” and felt like I was at most home with them. They were the coolest people I’ve met on the interview trail and at my own institution!



Check out our story highlight on Instagram @nmpira for the rest of the executive board spotlights!

2023 Conference Highlights



After celebrating the 55th anniversary of Med-Peds at last year's annual conference in Anaheim, CA, the Med-Peds community gathered again in-person for the 2023 NMPRA National Conference in Washington D.C. This one-and-a-half day event, held on October 21-22nd at the Westin DC City Center, had us explore the theme, "Medicine and Pediatrics in Health Equity and Advocacy."

The conference featured a stellar line-up of speakers, including U.S. public health service officers on "Breaking the Glass Ceiling", Dr. Annie Andrews on physician political engagement, Dr. Patience White on transitional care, and the keynote speaker, Dr. Ryan Buchholz of Unity Health. Along with residents and medical students from across the country, alumni physicians from Association of Med Peds Physicians (AMPP) also represented at the conference, celebrating AMPP's first-year anniversary.



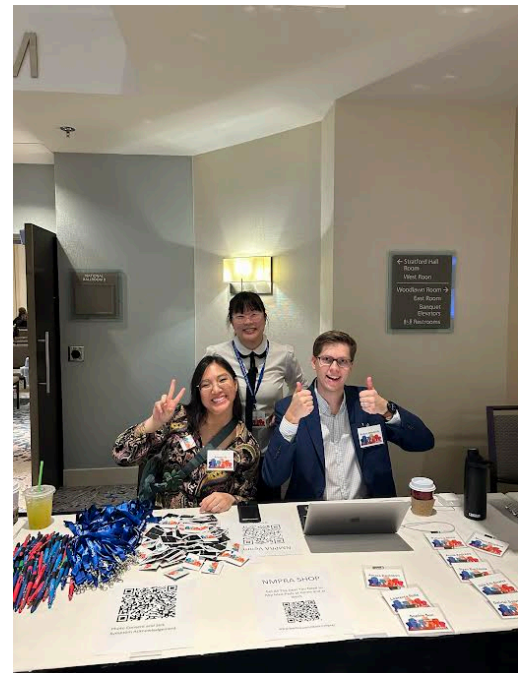
The Perspective

• • •

A special shout-out to our executive board members, especially our President Stephanie Lee for their work in making the conference a success!



Several participants also showcased their special talents and achievements through breakout sessions and poster presentations. We ended the day with a karaoke party, where we jammed to some of our favorite songs!



Poster Competition

Stroke-like Receptive Aphasia in COVID-19 without Respiratory Symptoms

Soo Hun Yoon, OMS4

Michigan State University College of Osteopathic Medicine

Recurrent Hyponatremia - An unclear etiology in a complex patient

Erica Riddick, MS4

Drexel College of Medicine

Engagement in Primary Care Following Incarceration

Christine Lopez, MS4

Icahn School of Medicine at Mt. Sinai

If it's not a DVT, what is it?

Tiffany Wang, PGY3

UPMC

Sepsis Secondary to Pyoderma Gangrenosum and MRSA Superinfection in Crohn's Patient

Brandon Stahl, PGY1

Albany Medical Center

Refractory case of Streptococcus constellatus intracranial infection in a pediatric patient: a case report

Anh Mai Nguyen, PGY3

Albany Medical Center

A Deceptive Triad: Anemia, Renal Failure, and Bloody Diarrhea Misdiagnosed as HUS in a Patient with Infective Endocarditis-related Mixed Cryoglobulinemia

Gabriel Solorzano, PGY4

Albany Medical Center

What the Helminth?

Bari Rosenberg, PGY3

Duke Medical Center

Solid Food Refusal & Behavioral Change

Spenser Chen, PGY1

University of Pennsylvania/CHOP

Upper extremity pain in a young-adult refugee with congenital heart disease

Brittany Glassberg, PGY3

University of Pennsylvania/CHOP

A Pediatric Clue for an Adult Chylothorax: Diagnosing Plastic Bronchitis

Megan Barnes, PGY4

Loyola University Medical Center

Grant and Award Winners 2023-2024

Resident Clinical Case Competition

Gabriel Solorzano, MD

Albany Medical Center

Medical Student Clinical Case Competition

Christine Lopez

Icahn School of Medicine at Mount Sinai

Medical Student Interest Group Award

University of Colorado Med-Peds Interest Group

University of Colorado School of Medicine

Grant and Award Winners / Conference Presenters 2023-2024

Community Service Grant

Madeline Mlynczak, MD, MS

Tulane University

Advocacy Grant

Rachel Holloway, MD

University of Cincinnati

International Travel Grant

Juhi Ramchandani, MD

Indiana University

Quality Improvement Grant

Jennifer Sun MD, PhD

University of Pennsylvania/CHOP

Research Grant

Megan A. Harris, MD, MPH

University of Cincinnati



Check out our story highlight on
Instagram @nmpira for the full
conference recap!

Spotlight On

In October, the Rush Internal Medicine - Pediatric Residency Program hosted their 6th Annual Well Adolescent Night. Medical students from the Rush University Med-Peds Interest Group and students from Crane Medical Preparatory High School came together for an evening of hands-on learning. Well Adolescent Night focuses on the HEADSSS Adolescent Assessment: The Home, Education/Employment, Activities, Drugs, Sexuality, Safety (violence and abuse), and Suicide Assessment. Using prewritten prompts, medical students and high school students had the opportunity to practice being both patient and practitioner. Students will also view demonstrations of basic physical exam maneuvers: Reflexes, MSK, pulse and RR, eye tests, heart and lung sounds, percussion and more! Rush Med-Peds is proud to have a continued relationship with our neighboring STEM high school, exposing students to pathways toward medicine.



Spotlight On

Since 2019, the Med-Peds Residency Programs in North Carolina have teamed up for an annual advocacy run. The Duke, East Carolina University, and University of North Carolina programs collectively raise money for a special cause in an effort to give back to their community. Organizations benefiting from the runs over the last five years include the Cystic Fibrosis Foundation, Vaccine Ambassadors, El Futuro (specializing in mental health for Hispanic communities), The Thomas Kinney Sickle Cell Research Foundation, and Bridges Pointe, Inc (supporting social needs of patients with sickle cell disease). This year, the programs raised money for the LGBTQ+ Center of Durham.

After organizing and raising money, the programs meet up on race day annually at the City of Oaks race in Raleigh for some friendly competition and to show off our Med-Peds pride.



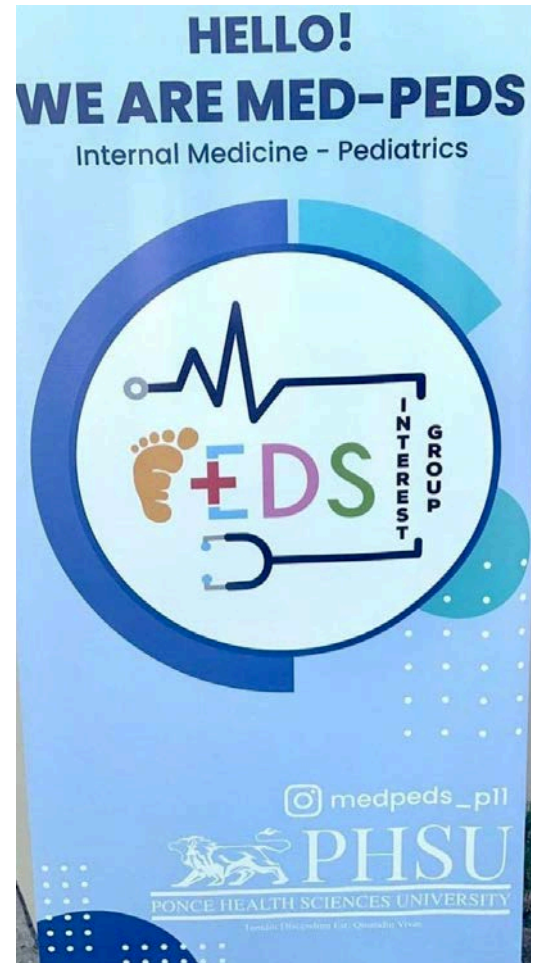
Spotlight On

By Selena M. Rodriguez Rivera, MD, AAHIVS, FAAP

The Ponce Health Sciences University Med-Peds Interest Group is comprised of individuals committed to providing relevant information to medical students who aspire to pursue a career in Med-Peds. This group has functioned independently for about a year without a mentor as the group members were unable to identify a Med-Peds mentor (to my knowledge, as of August 2023, there are only 2 Med-Peds trained physicians on the island of Puerto Rico!).

Impressively, this group has participated in multiple health fairs across the island and coordinated post-hurricane relief efforts for various communities in need after Hurricane Fiona.

They have also organized hospital visits, study sessions and skills workshops along with panels with guests ranging from IM and Peds faculty to former students that matched into Med-Peds programs. Honestly, when asked to join as the group's faculty mentor, I was impressed with the amount of work and activities they had already done and am humbled to be included as a part of their continued efforts to make Med-Peds known as a specialty and career choice. I wanted to highlight a group that has gone above and beyond to spread the word about Med-Peds in a place where little is known about the specialty and its options.



Essays / Poems

Matthew Manfredo, MS2

Western Atlantic University School of Medicine, Bahamas

An Open Letter to Med Students

Dear fellow med students,

If you are reading this right now, chances are you have a drive that is unmatched. The commitment and dedication I see from those interested in Med-Peds is remarkable. If you have not heard it recently, I want you to know how proud I am of you. The decision to enter this field is not taken lightly by any of us. The work completed in the background does NOT go unnoticed. The long hours of studying, founding/leading clubs, volunteering, tutoring, and so much more will pay off when we earn that medical degree. You are so cherished and loved and I care about you even if we have never met.

To other IMGs specifically, anyone who doubts you and your capabilities has no idea the sacrifices you have made to be where you are. You are not less than. You are not inadequate. You are not throwing a "Hail Mary." What you are is a warrior. You are strong and capable of greatness. Medical school is hard enough. There is no reason for others to make you feel as if you do not deserve to be here. You will be an incredible physician because you have the grit and stamina to go the distance for your patients.

When you are feeling hopeless, crushed, home-sick, or tired, know that taking care of yourself first is a must, especially in a field where we see the hypocrisy of physician wellness not being taken seriously. We cannot serve others effectively if we are run-down and on the brink of breaking. It is easy to say, "have a support group". But it is much more difficult to actually lean on them when we need it. Taking a break for your mental, physical, spiritual, and psychological health does not make you weak. No, it takes strength to know when to say, "enough is enough".

I look forward to the day when I can call some of you my colleagues and friends. Until then, I will leave you with a few final words. We all have a common goal: to provide comprehensive and compassionate care to every patient we come across. Do not forget to keep that same attitude with attendings, residents, nurses, PAs, NPs, pharmacists, social workers, etc. We belong to the best team there is – the healthcare team. We are taking care of those who are likely in one of the most vulnerable states they can be. Give yourself and others grace, because this mountain we are climbing is difficult, but reaching the summit takes time.

The Perspective

• • •

Ezra Smith, MS2

Texas Tech University Health Sciences Center School of Medicine

The Daily Act of Caring

I care a lot. I hope you know.
I care in the morning,
As I say hello to strange faces.
I care in my study room,
Watching my peers' hopeful gaze.
I care at lunch,
I forgot to pack mine again.
I care in the afternoon,
As it becomes harder to focus.
Then I go home,
And I still care.
I care for my wife,
And our young son.
I get down on the floor,
To play with cars and rubber balls.
I reach up high,
To grab plates and utensils.
I scrub and clean,
Dishes and floors.
Then at night,
The simplest, "I love you"
I swear that I care,
And I'll continue to care.
Because that is what we do,
We care...

The Perspective

• • •

Sanjay Chainani, PGY5

UMass Memorial Health Medical Center

From Prep to Practice: Using Pediatric Board Prep as an Opportunity to Build Teaching Capacity

Since the first American Board of Pediatrics exam in 1934, generations of Pediatric residents have diligently prepared for the Pediatrics board exams¹. Graduating residents take their board exam during a busy time in their lives. Many are starting a new job while others are applying or beginning fellowship training. As their own daily clinical practice may start to narrow in scope, the board exam challenges new pediatricians to demonstrate a broad understanding of a range of topics in order to be certified in general pediatrics.

Regardless of a trainee's exact career goals, medical education is a common competency for all Pediatrics graduates. A high proportion of physicians choose to practice in an academic setting where teaching trainees is a regular part of their jobs². Participating in education may protect against burn-out and contribute to the well-being of pediatricians³.

This invites the question - Could pediatric board exam prep be an under-utilized opportunity to prepare new residency graduates transitioning from a primary role of learners to educators?

My Board Prep Journey: As a combined Internal Medicine/Pediatrics resident, I had the task of preparing for two board exams as I took on applying to fellowship and new responsibilities as a chief resident. While I tried to set study goals, it was difficult to summon the intrinsic motivation needed to sustain studying after long workdays. I also struggled with finding the best way to utilize my board prep resources. Question banks were helpful for practicing test-taking strategies, but I worried that I was missing the broader concepts and models to organize a large amount of information. Even when I used more complete reference books, I felt that I was "learning to the test" and that my study methods were predisposing me to cram and quickly forget knowledge. The desire to use my board prep time while maximizing my own learning and preparing me to be a better teacher led me to develop board teaching aids.

Starting by Choosing Topics and Objectives: While doing question banks, I looked for questions that might make good teaching tools. Often these were topics for which I got several questions wrong. I selected topics that are relevant to clinical settings in which I frequently teach - for instance, general inpatient pediatrics or primary care. Last, I chose topics that I was passionate about and would be excited to teach to learners.

The Perspective

• • •

It was also important to select learning objectives related to the question. For instance, a given question may ask about the management of a rash in a neonate, with an accompanying picture illustrating neonatal HSV. Learning objectives for a related teaching aid could include an overview of describing rashes for medical students, the differential diagnosis of a vesicular rash, or could directly address management options for forms of neonatal HSV. Explicitly verbalizing the intended learning objective guided the best supporting resources and format for that aid.

Developing a Teaching Aid: The answers provided by question banks often were excellent starting points for developing teaching aids. Often, the question bank presented algorithms or models which could then be built upon. Answers in question banks often contain a list of references which could be used for further information. I commonly referred to AAP's Pediatrics in Review, which contains broad overviews of topics. I also found Clinical Guidelines from the AAP or other specialty bodies very helpful. Reviewing these improved the evidence basis of my studying. They also increased the clinical relevance of the aids and provided opportunities to discuss times when real clinical practice departs from guidelines. More detailed literature searches helped fill in gaps outside of the bounds of the above resources and often introduced models and representations which were helpful in developing a "board map".

Formatting the Aid: Following a focused review of the literature, I developed board maps for the teaching aid. The format of the board map derived from the learning goals and resources I chose. For example, if my goal was to contrast multiple similar diagnoses, a table listing the epidemiology, pathology, presentation, work up, and treatment of each was effective. A topic such as airway obstructions might be better suited for a more anatomical approach, where I drew out a diagram of the upper and lower airways with arrows highlighting pathologies at each level. Simply breaking down a review article or guideline into boxes for each section in the primary source could also be effective. Prior literature on optimizing whiteboard talks were helpful in finding ways to visually break down topics^{4,5}. While mapping out my content, I considered incorporating elements to promote learner engagement - for instance, tables that I could invite learners to collaboratively fill out during the talk.

Importantly, I limited the process of literature review and developing the aid to less than an hour so that I could quickly return to studying. I created a folder in my online drive to hold my teaching aids. I took a photo of each aid and directly uploaded it to my drive for easy access.

(continued on next page)

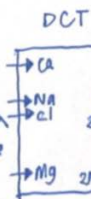
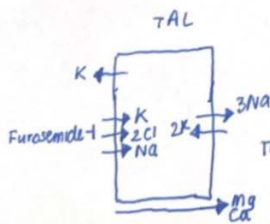
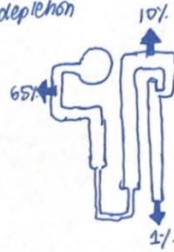
The Perspective

• • •

BARTER & GITELMAN

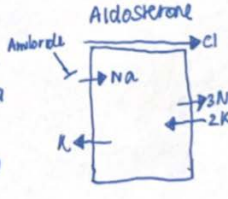
BARTER

- Path** TAL dysfunction (NKCC2 or ROMK)
Pt Dx prenatally or infant
Sx Perinatal - polyuria, polyhydramnios, premature
 Postnatal - renal salt wasting, volume depletion
W/u ① Low urine osm (hyposmaturia)
 ② Hypercalciuria → osteopenia
 → nephrocalcinosis
 → cramps + tetany
 ③ ROMK → Hypernatremia
 ④ Metabolic alkalosis
Tx Replace salt + water to prevent shock
 Can address polyuria w/ PGE inhibition
 (Indomethacin, NSAID)



GITELMAN

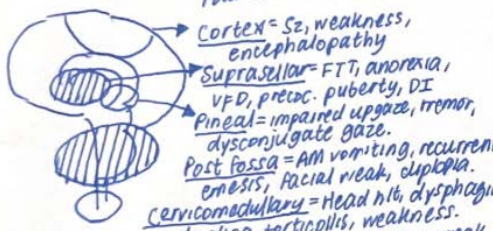
- Path** DCT dysfunction (NCCT)
Pt Infant or childhood
Sx Hypokalemia
 Hypocalciuria → Tetany, muscle cramps
 Hypomg
 metabolic alkalosis
Ix Replace Na, K
 Replace mg to prevent hypok + chondrocalcinosis
 K sparing diuretic



CNS TUMORS

1. PRESENTATION

- HA - most common but only 1/3
- ICP - Cushing triad (bradycardia, HTN, abnl respiration)
- Macrocephaly, full fontanelle



Spinal cord = Back pain (1/3), gait/coordination, weak, bowel/bladder dysfunction.

2. INITIAL MANAGEMENT

- a. CT vs MRI b. ↑ICP - Mannitol, ↑HOB, hyperventilate

3. SYNDROME

tumors	others
FAP	Medulloblast, ependymoma, astrocytoma
NF1	Low-grade glioma, optic glioma, astrocytoma, schwannoma, meningioma, PFT, ependymoma
NF2	Subependymal giant cell astrocytoma
TS	Hemangioblastoma
VHL	Glioma, medulloblastoma, choroid plexus
Li-Fraumeni	Sarcoma, breast ca, adrenocortical ca
	Leukemia, neurofibroma, nerve sheath tumor
	Renal, cardiac hamartoma
	Pheo, RCC, paraganglioma
	Sarcoma, breast ca, adrenocortical ca

4. TUMORS

Tumor	Location	Subtype	Outcome
Medulloblastoma	Post Fossa Gbs hydroceph	Classic Large cell Molecular	70% 5-year
Atypical Teratoid Rhabdoid	Post Fossa or Supratentorial	Molecular	25% 3-year
Ependymoma	2/3 Post Fossa Rest supratentorial or spinal cord	Divided by molecular + anatomical	60% 10-year
Low-grade Glioma	Many locations		Resect if possible >90% 1-year
- PFT - Oligodendroglioma			
Hi-grade Glioma	Hemispheric - glioblastoma Brainstem - diffuse intrinsic Non-brainstem - diffuse midline		
Germ Cell	Pineal, suprasellar, thalamus, basal ganglia		Germinoma - 90% 1-yr Nongerminoma - 60% 1-yr
Craniopharyngioma	Suprasellar	Adenomatous Papillary	

5. LATE EFFECTS



Peds in Review

Figure 1. Sample Teaching Aids on CNS tumors and Barter and Gitelman Syndrome

(continued on next page)

The Perspective

• • •

How Did it Work? Developing the teaching aid turned a single board prep question into an opportunity to develop or refresh my understanding of a framework for a topic. I frequently found myself referring to my teaching aids as I studied. Moreover, taking a break from questions to develop something with real utility for my chief year made studying feel much more practical and productive. I felt more confident that I was using my time studying to serve my own career goals rather than simply studying in order to pass a board exam.

The teaching aids I developed have become extremely helpful tools that I rely on for daily clinical teaching. Recently I was working overnights to support our team of a senior resident, sub-intern, and third year medical student. When the student mentioned she was nervous for her upcoming inpatient time on the hematology-oncology service, I was able to quickly access my teaching aid on my phone. I led a fifteen-minute whiteboard talk for the group on lymphomas, a subject I would not have felt comfortable teaching several months prior. While using the aid, the talk became a framework for the senior resident to do further teaching on oncologic emergencies. Having a prepared teaching aid helped me overcome barriers including a perceived lack of confidence or uncertainty about the best way to teach, turning a few quiet moments into an opportunity for active learning.

As I use my aids, I iteratively refine them to incorporate new information and improve the flow of the talk. This process helps ensure the aid continues to effectively support its intended learning goals.

Conclusion: Using board prep time to develop teaching aids made my board prep time feel productive and even enjoyable. While I have not received my board scores yet, I felt more prepared to take my pediatric board exam and answer questions which may not have directly appeared while I was studying. Most importantly, I have felt more confident during on-the-fly teaching and as I begin my career as a clinician-educator.

References

1. Brownlee, R. C. (1994). The American Board of Pediatrics: its origin and early history. *Pediatrics*, 94(5), 732-735.
2. Freed, G. L., Moran, L. M., Van, K. D., Leslie, L. K., & Research Advisory Committee of the American Board of Pediatrics. (2016). Current workforce of general pediatricians in the United States. *Pediatrics*, 137(4).
3. Fealy, J. L., Punnett, A., Burrows, H. L., & Fenick, A. M. (2023). Educational roles impact burnout in paediatric undergraduate medical educators. *The Clinical Teacher*, 20(1), e13549.
4. Nelson, R. E., Richards, J. B., & Ricotta, D. N. (2022). Strategies to elevate whiteboard mini lectures. *The Clinical Teacher*, 19(2), 79-85.
5. Nelson, R. E., Jackson, C. D., Yang, Y., & Ricotta, D. N. (2023). Enriching Resident Engagement During Whiteboard Mini-Talks. *Journal of Graduate Medical Education*, 15(5), 536-540.

Cases

Disparity and Audiometry Screening for Pediatric and Adult Patients in Tacna, Peru

Megan McDonald MS3, Courtney Miller MD, Andrea Summer MD MSCR
Medical University of South Carolina

Introduction

Hearing impairment affects an estimated 278 million people worldwide, with 70 percent of those people living in low-income countries. 25 percent of these people develop hearing loss in childhood, which often goes undetected in low- and middle-income settings. For this reason, infants born in resource poor countries are twice as likely to suffer from hearing loss. Particularly within Peru, there are a significant number of children living in poverty, and a lack of data indicating the severity of hearing impairment within the country due to limited screening tools. For this reason, there is a high need for a screening alternative that is low cost, highly effective, and highly portable for use in resource depleted settings.

Case Description

The purpose of the present case study was to determine prevalence of hearing impairment in Tacna, Peru within pediatric patients and older adults using a tablet audiometer. A Shoebox, Ltd. Tablet audiometer was used to screen patients between ages 3 and 84. Patients were instructed to follow the instructions on the iPad screen and an audiogram was generated with their results. Patients were counseled and given recommendations based on their results, and an exit survey containing three questions was performed via WhatsApp three days after screening. Results showed that out of 43 patients evaluated, 39.5 percent had some form of hearing impairment, 23 percent recognized their abnormal results when surveyed, and 65 percent recalled recommendations given by the provider.

Discussion

Overall, the goal of the case study was met, allowing for a determination of the prevalence of hearing impairment among a wide range of ages, pediatric to older adult, in a low-income area in Peru that has previously not had access to this type of screening. Results from surveys revealed that recommendations to patients based on audiometry results may need to be more specific, particularly in cases where follow-up is needed, given that only 23 percent of patients recalled their abnormal results when surveyed three days later. Thus, refinement and standardization of audiometry results explanation is needed to ensure that patients have a good understanding of their results and what they mean (normal vs. abnormal), as well as resources to act on these results.

The Perspective

• • •

Conclusion

Results show that tablet audiometry may be a valuable alternative for hearing screening in low-income settings. Further investigation is needed to determine and develop best practice methods for screening based on age and behavior factors.

Take Home Points

- Hearing impairment is a significant health disparity impacting a large portion of our Med-Peds population worldwide, particularly in low-income areas.
- A dire need exists for low-cost, portable screening alternatives for hearing impairment, particularly in low-income areas.
- Portable, application-based audiometry may serve as an effective alternative to fulfill this purpose, but a need exists for additional research to determine the best practice for this type of screening.

References

1. Chadha S, Kamenov K, Cieza A. The world report on hearing, 2021. Bull World Health Organ. 2021 Apr 1;99(4):242-242A. doi: 10.2471/BLT.21.285643. PMID: 33953438; PMCID: PMC8085630.
2. Lammers D, Rocker A, Chan DS, Couchman D, Wang Y, Fraser A, MacCormick J, Bromwich M. iHear: Canadian medical student based hearing assessment program for grade school children using a tablet audiometer. J Otolaryngol Head Neck Surg. 2021 Oct 29;50(1):60. doi: 10.1186/s40463-021-00542-w. PMID: 34715947; PMCID: PMC8556998.
3. Czechowicz JA, Messner AH, Alarcon-Matutti E, Alarcon J, Quinones-Calderon G, Montano S, Zunt JR. Hearing impairment and poverty: the epidemiology of ear disease in Peruvian schoolchildren. Otolaryngol Head Neck Surg. 2010 Feb;142(2):272-7. doi: 10.1016/j.otohns.2009.10.040. PMID: 20115987; PMCID: PMC5649379.
4. McPherson B, Law MM, Wong MS. Hearing screening for school children: comparison of low-cost, computer-based and conventional audiometry. Child Care Health Dev. 2010 May;36(3):323-31. doi: 10.1111/j.1365-2214.2010.01079.x. PMID: 20507326.

Tiny Tummy, Tremendous Triglycerides: A Pediatric Case of Hypertriglyceridemic Pancreatitis

Jake Gigliotti MS3, Zhidong Wang MS2, Claire Gallion MS2, Matthew Nicholson MD
Medical College of Georgia

Introduction

Hypertriglyceridemic pancreatitis (HTGP), while somewhat common in adults, is rare in the pediatric population. As such, best practices in pediatric patients are not well established. Mainstays of treatment in adults are fluids, diet restrict, and pain control, which may be supplemented with IV insulin and plasmapheresis in severe cases. Herein, we describe a case of a pediatric patient with HTGP who underwent a prolonged diagnostic process with multiple hospitalizations culminating in ICU admission during which she was successfully treated with insulin in accordance with the adult literature, demonstrating the value of understanding both adult and pediatric medicine, to which the Med-Peds provider is particularly well-suited.

Case description

A 6-year-old previously healthy black female presented with anorexia and abdominal pain for 2 days. The pain was initially periumbilical but spread across the upper abdomen by the time of presentation. She ate a balanced diet and had one bowel movement per day. Family history was significant only for a brother with Hirschsprung's and unspecified "cholesterol problems" in elderly relatives. Physical exam was notable for tachycardia to 124 BPM, BP 140/82 mmHg, BMI at the 80th percentile, and diffuse abdominal tenderness with voluntary guarding. Labs demonstrated leukocytosis to 17.3 thous/mL, mild hyperglycemia at 168 mg/dL, lactic acidemia to 4.65 mmol/L with an anion gap of 17, and glucosuria and trace ketones. Ultrasound showed normal appendix and small amount of free fluid in right upper quadrant. Abdominal and chest radiographs were unremarkable. The peripheral blood draw demonstrated clotting in the syringe and a large layer of white fatty substance, concerning for hypertriglyceridemia.

After admission, amylase and lipase were significantly elevated at 395 U/L and 738 U/L respectively. Fasting triglycerides were elevated at 493 mg/dL with a low HDL of 8 mg/dL and LDL of 12 mg/dL. A working diagnosis of pancreatitis due to hyperlipidemia was made based on the lab and exam findings. Follow-up ultrasound was limited by overlying bowel gas but found no evidence of complications of pancreatitis, fluid collection, or cyst formation. Patient received IV rehydration and pain control; amylase and lipase levels trended down, while triglyceride level remained elevated. She was started on niacin, a low fat and low carbohydrate diet, and was discharged to follow up with pediatric cardiology and primary care. Genetic counseling was also recommended to evaluate for hereditary dyslipidemia syndromes. Pediatric cardiology started the patient on gemfibrozil and encouraged healthy diet and exercise.

The Perspective

• • •

Testing at one month follow up showed normal fasting lipid levels; the pediatric cardiologist theorized that the previous lipid elevation was secondary to pancreatitis and discontinued niacin and gemfibrozil. At her four month follow up with cardiology, the patient was asymptomatic with elevated cholesterol at 371 mg/dL, low HDL at 4 mg/dL, and severely elevated triglycerides at 4176 mg/dL. She was restarted on gemfibrozil and fish oil was added. A dyslipidemia genetic panel showed no reportable variants. Later, she was switched to fenofibrate.

Over the next 18 months, the patient was hospitalized twice more with symptoms of pancreatitis and elevated triglycerides and lipase. On each occasion, she was treated with IV fluids and pain management and adjustments were made to her home medications, notably, niacin was restarted and the dosage of fenofibrate was increased. Cystic fibrosis testing was performed and was negative.

Two years after initial presentation, the patient returned with abdominal pain and was found to have triglycerides of 8253 mg/dL. She was admitted to PICU due to concern for risk of multiorgan failure secondary to hyperviscosity. In addition to IV fluids and pain management, insulin and dextrose/sodium chloride drips were initiated. Triglycerides dropped precipitously, reaching 402 mg/dL on hospital day 3 prompting discontinuation of insulin, but rebounded to the 900s the subsequent day so insulin therapy was briefly re-initiated. Patient was discharged without insulin 5 days after admission and referred to endocrinology for follow-up. ApoB level was tested and returned normal. Further genetic testing including clinical exome and mitochondrial genome returned negative. A definitive diagnosis has not yet been established – the patient's presentation coupled with the low HDL level suggests primary hyperlipidemia type IIB or IV as the most likely diagnoses, though type IIA cannot be excluded. Diabetes mellitus, though a possible cause of elevated triglycerides, is less likely given the extreme elevations in triglycerides and comparatively normal glucose levels.

Discussion

Hypertriglyceridemic pancreatitis is a relatively common condition in adults: acute pancreatitis rates are 51.5 per 100,000 in the U.S. and approximately 10% of those cases are due to HTGP.¹ However, in children, the incidence of acute pancreatitis is much lower, at 2.4-13.2 per 100,000, and pancreatitis due to metabolic causes such as HTGP was estimated to represent only 2-7% of these cases.^{2,3}

The pathophysiology of HTGP has not been fully elucidated, but it is theorized that elevated blood lipid levels increase plasma viscosity, leading to pancreatic ischemia.⁴ Additionally, triglyceride hydrolysis by pancreatic lipase may create excessive free fatty acid and cause inflammation and vascular damage.⁵ HTGP typically occur in patients with lipid abnormalities and a secondary trigger that exacerbates the hypertriglyceridemia, however, isolated primary hyperlipidemia may sometimes cause HTGP independently.⁶ HTGP presents similarly to other acute pancreatitis, although it has been demonstrated to be associated with worse clinical

outcomes.¹ Furthermore, elevated serum triglycerides were found to be an independent and proportional risk factor for organ failure.⁷

In adults, HTGP is generally treated with intravenous fluids and dietary restrictions⁸. Additionally, insulin drip is commonly used to decrease the circulating triglyceride level by promoting LPL activation⁸. For patients with evidence of multi-organ failure, plasmapheresis is also considered, though the evidence for its efficacy is still pauc⁸. Widely accepted guidelines for diagnoses and treatment of HTGP in children do not exist, however, this case demonstrates that similar measures may be efficacious, as evidenced by clinical improvement with IV fluids during each hospitalization. Particularly notable is the speed of clinical and laboratory improvement during the ICU admission when an insulin drip was utilized.

Conclusion/Take Home Points

HTGP is a rare diagnosis in pediatric patients, but is a relatively common condition in adults⁹. Thus, pediatricians may be slower to appropriately diagnose and treat HTGP than their colleagues in internal medicine, who have more experience recognizing HTGP and established guidelines for its treatment. These differences in experience may lead to delays in care and multiple, extended hospitalizations, as in this case. When severe, traditionally “adult” conditions occur in pediatric patients, rapid recognition is essential, and appropriate adaptation of adult treatment guidelines may be valuable in advancing patient care. Specifically, IV fluids and insulin appear to be efficacious in managing HTGP in pediatric patients. Med-Peds physicians with experience caring for acutely ill children and adults are uniquely positioned to bridge the gaps in treating adult conditions in pediatric patients through prompt recognition and extrapolation of appropriate treatment regimens from adult research to pediatric patients.

References

1. de Pretis N, Amodio A, Frulloni L. Hypertriglyceridemic pancreatitis: Epidemiology, pathophysiology and clinical management. *United European Gastroenterol J*. 2018;6(5):649-655. doi:10.1177/2050640618755002
2. Morinville VD, Barmada MM, Lowe ME. Increasing incidence of acute pancreatitis at an American pediatric tertiary care center: is greater awareness among physicians responsible? *Pancreas*. 2010;39(1):5-8. doi:10.1097/MPA.0b013e3181baac47
3. Bai HX, Lowe ME, Husain SZ. What Have We Learned About Acute Pancreatitis in Children? *J Pediatr Gastroenterol Nutr*. 2011;52(3):262-270. doi:10.1097/MPG.0b013e3182061d75
4. Valdivielso P, Ramírez-Bueno A, Ewald N. Current knowledge of hypertriglyceridemic pancreatitis. *Eur J Intern Med*. 2014;25(8):689-694. doi:10.1016/j.ejim.2014.08.008

The Perspective

• • •

5. Kimura W, Mössner J. Role of hypertriglyceridemia in the pathogenesis of experimental acute pancreatitis in rats. *Int J Pancreatol.* 1996;20(3):177-184. doi:10.1007/BF02803766
6. Yadav D, Pitchumoni CS. Issues in hyperlipidemic pancreatitis. *J Clin Gastroenterol.* 2003;36(1):54-62. doi:10.1097/00004836-200301000-00016
7. Nawaz H, Koutroumpakis E, Easler J, et al. Elevated serum triglycerides are independently associated with persistent organ failure in acute pancreatitis. *Am J Gastroenterol.* 2015;110(10):1497-1503. doi:10.1038/ajg.2015.261
8. Grisham JM, Tran AH, Ellery K. Hypertriglyceridemia-induced acute pancreatitis in children: A mini-review. *Front Pediatr.* 2022;10:931336. doi:10.3389/fped.2022.931336
9. Li CL, Jiang M, Pan CQ, Li J, Xu LG. The global, regional, and national burden of acute pancreatitis in 204 countries and territories, 1990-2019. *BMC Gastroenterol.* 2021;21(1):332. doi:10.1186/s12876-021-01906-2

NMPRA Notes

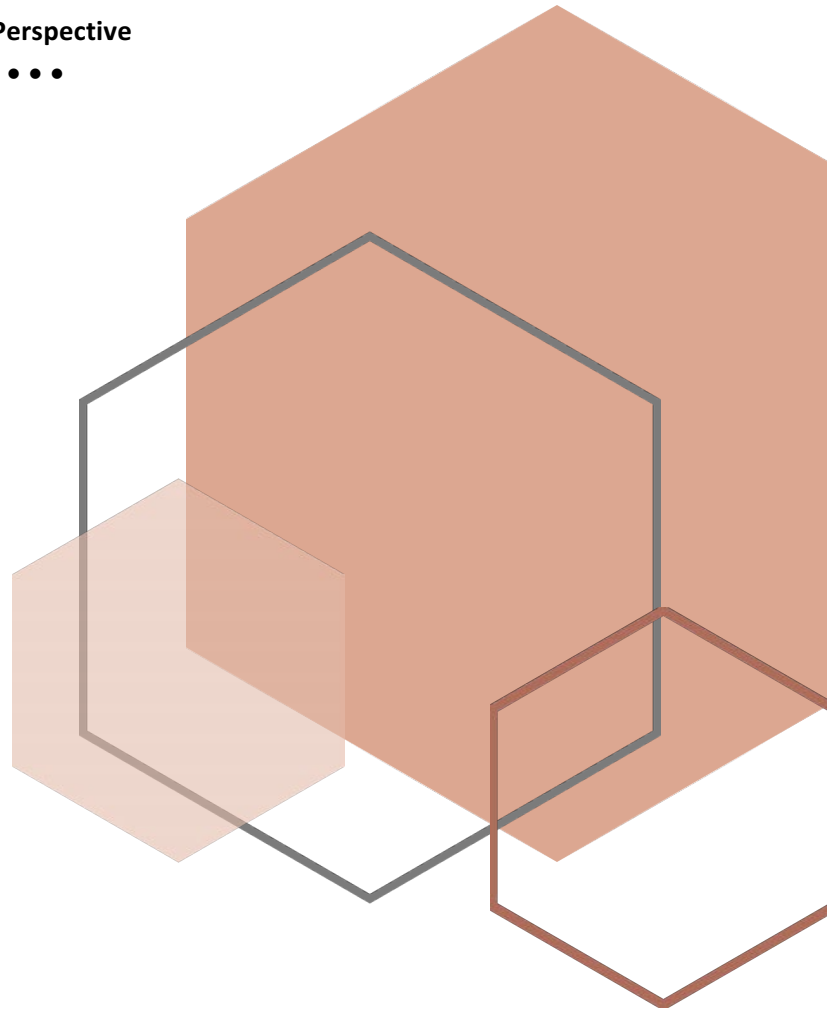
Calling all Interested Programs

NMPRA social media will be restarting a series highlighting residency programs across the US as we approach recruitment season!

If interested in participating, please email our NMPRA PR Secretary Diane Choi at communications@medpeds.org

The Perspective

...



This newsletter is published as a collaborative effort between the following organizations:



Medpeds.org

@nmpra

