MACEP PEDIATRIC NEWSLETTER
Spring 2022

Co-chairs: Ashley Foster and Joyce Li

Welcome to the MACEP Spring Pediatric Newsletter! We know it has been a rough couple of years between COVID and the behavioral health crisis. We hope to continue to provide support for you and your EDs through our state pediatric emergency care coordinator website, our recent pediatric web series, and the New England Regional Behavioral Health Toolkit. For this newsletter, you will find an interesting case review, an education training opportunity, and a reflection by one of our own. Please feel free to reach out to Joyce and me if you are looking for any assistance or support for pediatric care in your ED.

-Ashley and Joyce

Thinking about non-accidental trauma in the Emergency Department

A 7-year-old female presents to the ED with several days of nausea, vomiting, and abdominal pain. She comes in with her mom – they are from out of town but have been in the city for the past week visiting the patient's dad. Mom and dad are separated, so mom had been staying in a hotel for the week and hadn't seen the patient until today. Dad had mentioned the vomiting to mom earlier in the week but thought it was anxiety from having traveled. Today, however, mom sees her and is worried about how pale and tired she looks, so she brings her to care. When the patient arrives, she looks sick – she's holding her stomach and in significant pain, hardly able to answer your questions.

What's your differential? Should you be concerned about trauma or, more specifically, non-accidental trauma (NAT) as a possibility? If you are concerned, what do you do next? And, if you weren't concerned initially, how do you know when to be concerned about NAT?

NAT is a critical must-not-miss diagnosis and one associated with significant morbidity and mortality. It should always be considered in your differential and particularly with an unknown diagnosis. Globally, nearly 3 out of every 4 children between the ages of 2-4 regularly suffer physical punishment and/or psychological violence perpetrated by a caregiver.[1] Thousands of children die each year due to non-accidental traumas, and the impact is disproportional with Black children experiencing higher fatality rates.[2,3] These statistics may even be an underestimate as the incidence of child abuse and neglect is known to be underreported.[4] How can we ensure the safety of our children and miss fewer of these injuries?

What should I do first?

HPI. Your history is important and may detect some red flags for NAT.

Certain flags include:

- No or vague explanation of trauma given from patient/caregiver despite obvious injury
- Implausible history for type or severity of injury (e.g., child <12 months who's non ambulatory and has a femur fracture)
- Severe injury is blamed on the patient, another young child, or pet
- Details of the trauma change between caregivers or upon retelling of the story
- Delay in presenting to medical care without reasonable explanation
- Trauma having occurred because of inadequate supervision or other concerning behavior on the part of a caregiver

Additionally, always remember to consider the age of your patient, as there are special considerations in infants in whom non-accidental trauma is even harder to identify. These include irritability without an identifiable cause, altered mental status, a reported brief resolved unexplained event (BRUE), unexplained vomiting, or other non-specific symptoms that can be manifestations of underlying abuse.[5]

Social History. Obtain a social history as you usually would. The World Health Organization has identified certain factors that place a child at higher risk for experiencing maltreatment[1], some of which are:

Individual factors: age under 4 years old or an adolescent, being unwanted or failing to fulfill a parent's expectations, having special needs, crying persistently, having abnormal physical features, having an intellectual disability or neurological disorder, or identifying as lesbian, gay, bisexual, or transgender

Caregiver factors: difficulty bonding with a newborn, having been maltreated themselves as a child, lacking awareness of typical child development or having unrealistic expectations, use of alcohol or drugs, low self-esteem, mental or neurological disorders

External/contextual factors: domestic violence present, family being isolated or lacking a support network, unemployment/poverty, lack of adequate housing, gender/social inequality, or policies in communities that cause any/all of the above

What do I do next?

Depending on your findings, certain injuries have a significantly higher association with abuse, including subdural hematomas, rib fractures, femur fractures in non-walking children, pancreatic and proximal small bowel injuries, and immersion burns.[6] However, this does not preclude any other injuries as being a consequence of abuse. If you have any suspicion for NAT from physical exam or history, you should have a low threshold to discuss the case with a social worker on your team or in your ED. Social workers and child protection teams (if your center has one) are invaluable to determining next steps and will help guide you down the right pathway.

Sometimes, you may not have access to these resources, and in these cases, it is your responsibility to file a report with Child and Protective Services. We are mandated reporters, and if non-accidental trauma is suspected, it's our obligation to report it to the appropriate authorities.

One final consideration is to whether there are siblings or other children at home. If you have suspicion for non-accidental trauma, these children may need to come in for a physical exam to ensure they have no concerning injuries.

A note on equity

It's important to recognize that we all have significant biases regarding non-accidental trauma and who we suspect of having suffered such trauma. Think about our girl – do you have a certain image in your mind of her? If I tell you that the patient is White and of a high socioeconomic status, would this have altered the way you view the case? Would we have done anything in the ED in a more or less timely manner or more easily brought NAT to the top of our differential? These are important questions to ask for every case to critically examine our own unconscious biases.

Specifically, within medicine, there is a racial disproportionality in care. Minority children are more likely to get a skeletal survey[7], more likely to be reported to CPS[7], and more likely to be evaluated and reported for suspected abusive head trauma EVEN after controlling for insurance status, independent expert determination of likelihood of abuse, and the appropriateness of performing a skeletal survey.[8] Hospitals generally are more likely to report that a child's injuries are due to abuse when the child is Black as compared to any other race.[9] Taken together, the research indicates that decision-making related to maltreatment contains a greater suspicion of Black families.

This is problematic for many reasons, most obviously by subjecting families of color to unwarranted investigations more frequently. It also means that OTHER medical diagnoses get overlooked more frequently in Black children and that we may underdiagnose abuse affecting White children. These points are important ones to keep in mind, particularly in the ED and in similar environments where a lack of time necessitates a reliance on cognitive heuristics.

In conclusion, as providers who screen children for injury, it is imperative that we think about NAT when children present to the ED. Only by recognizing its prevalence and understanding the supports in place (e.g., social workers, child protection teams) can we protect our children.

By Dr. Ayesha Dholakia PGY-2
Pediatrics, Boston Combined Residency Program

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Contact: Barbara M. Walsh, MD
Clinical Associate Professor of Pediatrics
Director, Pediatric In Situ and Mobile Outreach Simulation
Associate Director Pediatrics, Solomont Simulation Center
Boston University School of Medicine
Bwalshmd1@gmail.com; 781-382-8544

COMET- Community Outreach Mobile Education Training was developed and launched as a pilot study in 2010-2011 and laid the foundation for a larger collaborative called **ImPACTS – Improving Pediatric Acute Care through Simulation.** We have studied the care of acutely ill children using 4 simulation cases identifying gaps in care and systems issues among numerous hospitals in the North Atlantic, US. This program, which we bring directly to your trauma bay or resuscitation room, includes education, training, systems testing as well as serving as a patient quality and safety initiative longitudinally. We partner with each site being a resource for any questions or concerns in pediatric acute care and providing support for new issues that might arise in the future. Simulations are performed by your actual team construct and using your own equipment and resources. These events provide a platform for valid and reliable measurement of the quality of care and identify the impact of both human and systems-based safety threats. We will work with a designated PECC at your hospital to provide specific feedback on performance and to develop "action plans" to improve the quality of care (ex: refining pediatric sepsis algorithms, identification of latent safety threats, new pediatric medication dosing systems, pediatric policies, and develop innovative provider competencies). CEUs, CMEs and continuing ED through OEMS are offered to each site. All sites receive a detailed report out document from the first session that include participant feedback, then yearly with new cases. We follow up on systems changes and overall noted improvements at each site.

How does simulation benefit your teams? Case example: Multi trauma – 2-year-old fall out of a window

The patient arrives with HR 165, RR 35, Sat 94%, BP 90/60. Primary survey is intact. Secondary survey shows abdominal, chest, back contusions and occipital hematoma that is boggy. Abdomen is tender. Heart is tachycardic and the child is tachypneic with some coarse breath sounds throughout and is noted to be retracting. ABCs are addressed with O2, IV placement, trauma labs, fluids. FAST is done showing some fluid in the abdomen. Portable CXR shows pulmonary contusions. As the case evolves the child gets progressively more distressed, the abdomen is distended. Massive Transfusion Protocol is initiated. Heart rate continues to climb, O2 saturation drops, and respiratory distress is worsening. Blood pressure is falling. Within minutes of the vital signs changing, the child starts seizing and is cyanotic.

HOW DO YOU MANAGE THIS PATIENT?

Not all cases have to be this complicated. This case is an example of how priorities, reassessment, and communication will be essential to resuscitating this toddler. High stakes low frequency events are stressful and rare and require meticulous, coordinated, and efficient care. This particular case is based on a real patient. What you see at time 0, 5, 10, and 15 min can change. The physiology can evolve in real time. Ongoing reassessment will inform the critical management tasks. Initially, ABCs can be addressed with oxygen, multiple IV access, type and screen, VBG, IV fluids, and then reassessment. A differential diagnosis needs to be clearly shared and issues addressed according to what is most life threatening. As the respiratory rate increases, O2 sat decreases, blood pressure drops, and the patient becomes more tachycardic – is this pneumothorax, hemothorax, worsening pulmonary contusions, cardiac tamponade, or abdominal compromise from bleeding? What is the next step? How do we communicate this effectively? How do we direct care? When the patient starts to seize but also has respiratory compromise what is taking priority? Is this a life-threatening cardiac tamponade or herniation from an intracranial bleed? Simulation allows the opportunity to practice complex care, communication, and procedures. Working through cases such as this will reveal deficiencies in the system and latent safety threats. This is what COMET does at your site!

A reflection from a PEM physician

I was on a shift in the peds ED one afternoon during the peak of omicron wave when my phone rang. It was the nurse from my children's elementary school. I had emailed her a few hours earlier regarding the fact that my son had tested positive for COVID earlier that morning. She asked me about the timing of the onset of symptoms and informed me that the school would send e-mails to class parents, relaying the need of the hour: get their children tested.

I finished talking to the nurse and went back to work, which at that point of time involved discussing patient care with the pediatric resident. The conversation had been left dangling on the topic of pediatric IDSA guidelines on the management of community acquired pneumonia (CAP) in infants and children. We were deliberating the fact that viral pathogens are responsible for a large majority of clinical disease in the preschool age group. As I sat down to write my note, I couldn't help reflecting on the deep irony of the situation. There I was, treating viral respiratory infections in other children, while my own child lay sick with COVID at home. I felt terrible as a parent. My son's symptoms had started showing a day ago, precisely 2 weeks from his second dose of COVID vaccination. I had taken him to get tested the day before, preceding my evening shift. The results came through while I was still at work. It was difficult to process. As a family, we had been strict about not stepping out anywhere, except for work and school. We had not been to restaurants, social gatherings, or paid social visits to anyone, in over a year. We had opted for the first available appointment for vaccination, as soon as my son was eligible for immunization in his age group.

We were doing everything right, yet there he was, sick. And here I was, away from him in his hour of need. With his significant history of asthma, as well as other risk factors in our family, I was concerned.

What if the symptoms worsened? The babysitter had been out for a couple of weeks due to COVID as well. My husband was going to work from home that day and take care of our two children. All extended family being out of state, the only support I could rely on as I went to work, was that of my husband. We quarantined our son in his room – making sure to check on him frequently, while the rest of us wore masks. A day later, he reported shortness of breath. I was worried. But the PEM physician in me could tell he had mild to no work of breathing, his lungs sounded clear, the home pulse oximeter measured his oxygen saturation at 96% , he was fully vaccinated and we had our asthma action plan. It was as good as anything we could hope for. The PCP called to check in, advised continuing sick asthma action plan and sounded confident of his prognosis. Feeling somewhat secure in the knowledge that my son would be fine, I headed out for another 12-hour shift at work.

But if I could only express the internal conflict that one deals with when one plays the dual roles of a mother and a PEM physician, simultaneously. A part of me wished I could be home that day, however my son was doing okay for most part. Besides coworkers would have to cover for a sick call in a group that already had a few call outs due to COVID. As I drove to work, mind in turmoil, I thought about the IDSA guidelines that I had been discussing with the resident, just a day ago. Evidence-based guidelines recommend antimicrobial therapy is not routinely required for preschool aged children with CAP. Strong recommendation; high quality evidence. But was I being a good mother? Was there any evidence, if any, in support of it?

My shift in the pediatric ED that day involved seeing a lot of children afflicted with COVID, from 10-day-old neonate to 19-year-old young adults. Most were discharged home, except a few and one patient was admitted to the PICU. I was about 8 hours into my 12-hour shift when my son called me on FaceTime, using his iPad. His father was cooking dinner, and since he had instructions to quarantine in his room, he wanted to let me know that he needed the bottle of water in his room to be refilled.

He simply could not remember his father's phone number. Getting a water bottle to his room was easy enough to coordinate with my husband. But the call tugged on my heartstrings. I was consumed by feelings of inadequacy.

I was not alone. I heard similar stories during my shift that day. The mother of a child, who had contracted COVID from daycare and who I had attended to, wept as she told me of the guilt that she harbored at having sent her toddler to daycare, while she went to work. Sixteen years in emergency medicine, yet never have I felt a kindred connection with families over parental guilt, as I have during this pandemic. I find it unique that as ED physicians, we must learn to straddle different worlds: be there for your family, be a caring physician for the community, as also take one for the team.

The pandemic has schooled me on new perspectives, the beginnings of which were uncertain, for there was not enough knowhow of the disease or treatment options. One had to support one's children at home, while they were schooled through remote learning, while at the same time being conscientious of our job as a front-line worker. In time, hope came along in the shape of vaccines. With vaccinations, we were confident enough, as a society, to return to school and other activities. I learnt to deal with new dilemmas. My children's elementary school offers after-school childcare options to working parents. Taking note of new COVID protocols at school, parents were now required to sign a contract for specific days during a semester. We could not confirm exact days when we needed childcare because of the very nature of my work. ED scheduling is complex, and one cannot know of one's shifts four months in advance. The school could not accommodate us. While it served the needs of children whose parents have a 'normal' work schedule, my children couldn't be accommodated by virtue of their mother being a front-line worker and an ED physician. The irony of it was not lost on me.

As I learnt to navigate around these challenges, vaccines in younger age group became available, but also other variants started rolling in, the most recent being the Omicron wave. Followed by increasing numbers of new cases, but also newer pharmacological agents, numbers going down and subsequently a resurgence of hope for better days ahead again.

To round it all up, I have to say with some relief that my son did do well. I rationalized my parental guilt by reasoning that those 12-hour shifts at work reduced the higher risk of getting infected by a close household contact. That it left at least one parent healthy enough to fend for the entire family, if perchance the other parent did get sick. We were conscious about wearing masks within the house and remained COVID-free. The initial sense of anxiety was swept away when my son started to turn the corner in a few days. From the experience, if there is one thing that I have learnt about being a parent and an ED doc during a pandemic, it is to trust the science, stay calm, and be prepared for the worst, even if all resources are unavailable. Somewhat like running an ED resuscitation. All one can do is hope for the best outcome.

By Dr. Niti Sharma
Emergency Medicine and Pediatric Emergency Medicine
Tufts University School of Medicine