JOURNEY



A PEDIATRIC UROLOGY TAKE ON BOWEL AND BLADDER HEALTH - DRINK MORE WATER!

Belen Terrazas-Ponce, NP and Shumyle Alam, MD





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A very common concern that a pediatric urologist will see is the child with some degree of voiding dysfunction and constipation. Unfortunately, since children are always on the go, this can impact them in significant ways. Teachers may report that the child is not concentrating or fidgety in the classroom and the social stigma of any bowel or bladder accidents can lead to psychosocial distress or even anxiety. Further complicating the picture, is that children with ADHD have an increased risk of fecal incontinence and constipation and lower urinary tract symptoms. (1, 2)

Common presenting symptoms of Lower Urinary Tract Symptoms (LUTS) in children are: urgency, frequency, dysuria and straining while voiding. (Table 1) Day or nighttime accidents and UTI may also be related. An alarming number of children will have constipation as the underlying causative etiology of their urinary symptoms including infection. Such a simple issue can result in a significant disruption for the child both at home and in school.

Constipation is estimated to affect almost 10% of children worldwide. (4) In the United States the healthcare burden of pediatric constipation when adjusted for children is \$3.9 Billion/year. (3) This number does not take into consideration the costs associated with missed school, potential for diminished learning, nor the economic impact to the parents who must take time off to care for their child. Since many children present to the ER or Urgent Care with primarily LUTS with underlying

constipation the true economic impact of constipation may be underestimated.

The pediatric urologist is often faced with the "chicken or the egg" conundrum when evaluating and formulating a plan for the child with LUTS and constipation. A holistic care plan is advised as the child cannot be reasonably managed for their LUTS by ignoring one half of the pelvis. (Figure 1) To begin the process of understanding the complex interplay between the bowel and bladder especially in the child with ADHD or anxiety, some standards must be discussed regarding the work-up and definitions of the problems.

The bowel and bladder diary are a gold standard in helping to understand the problem. Often, recall, especially in the office setting is notoriously unreliable for addressing the urinary and bowel concerns. As noted earlier, children are always on the go and the caregiver present in the office may not be with the child save for a few hours a day, and in the case of single parent households, large gaps of time may be spent with the other parent. To assist with the diary, we standardize the definitions of constipation with the widely available Bristol Stool Chart. (Figure 2) Using the chart to define the stool quality allows a day to day assessment of the degree of constipation present.

Continued...



Urinary Tract concerns that can have underlying constipation as the cause

Dysuria Frequency
Urgency Daytime accidents
Bedwetting Straining to void
Epididymitis Hematuria
Proteinuria



CEO MESSAGE

WHAT AN EXCITING TIME here at El Paso Children's Hospital. Our 12th birthday is bringing new levels of growth this community proud to introduce the El Paso Children's Multispecialty Center this spring that will house all of the region's most comprehensive Later this fall, we will open the 8th floor of the hospital which brings 26 additional monitored beds. All of this growth truly exemplifies why the second straight year by El Paso and continue to be ranked as the "Top Hospital" in quality. We look forward to what 2024 will bring for the children of our community as we stay dedicated to keeping them home for the highest level of specialized pediatric healthcare.



Figure 1

Source: The interplay of bladder and bowel dysfunction. Illustration by Tryggve Nevéus Neurogenic bladder and bowel dysfunction: Clinical aspects in children with spinal dysraphism Wide, Peter 2020

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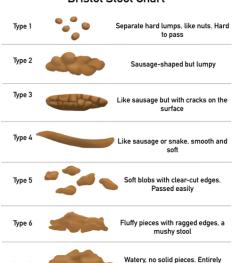


TABLE 2			
Medication	Mechanism	Indication	Special Considerations
Miralax, Lactulose, Milk Of Magnesia	Osmotic	Occasional constipation in healthy children	Will not work in settings of poor hydration. Can cause bloating.
Senna, Ex Lax	Stimulant	Daily management neurogenic bowel or chronic constipation	Not habit forming. Can be used daily.
Citrucel, Metamucil	Bulk forming	Primarily in patients with rapid transit and loose stools not due to encopresis	Relative contraindication if Bristol Type1-3 stool.
Mineral oil	Osmotic "like" Mainly works by	Occasional constipation creating "fatty stool"	Retards resorption water in stoo. Requires adequate hydration.
Colace	Stool softener/ emmolient laxatives	Best for post-op patients with no history constipation	Not effective for daily management if poor hydration. Draws water and fat into stool.

A nutritional assessment is often very helpful for management. Simply pointing out the various fibers and healthy foods is often not the most effective management. Approximately 17.4% of the US population live in food deserts and many households depend on the school lunch program to help feed their children. (USDA Food Access Research Atlas) In Texas alone, more than 3 million children rely on the school lunch program (5). In communities, such as El Paso we have the additional burden of understanding culture in addition to the relative higher proportion of at risk families and children for food insecurity. In these circumstances, food diaries are often helpful to determine an individualized nutrition plan for the patients utilizing what is available

Figure 2

Bristol Stool Chart



in their homes. These factors influence how diet can play a role and illustrates the limitation of a one size fits all nutrition plan for treating constipation.

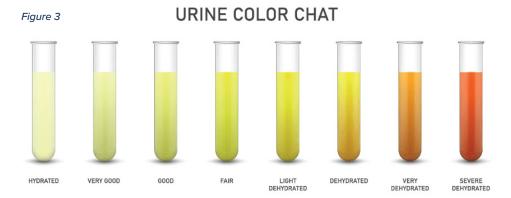
A pediatric urologist must also adequately assess urinary habits. A diary of accidents and when the patient voids is helpful, but only tells a small part of the story. An assessment of water and fluid intake is advised. Multiple diaries are difficult to keep and many families will forget to do them or bring them to the appointment. Opportunities to upload the diaries into the medical record are often welcomed by families and may improve the compliance with recording the data. It is helpful to engage the children and, just as with the Bristol stool chart, we can have them record the color of their urine which helps us understand the relative hydration status of the child during the day. (Figure 3) Unfortunately, timed voiding programs and double voiding programs are not scientifically vetted and may result in interruptions to learning when done frequently during the school day. A holistic care plan to address the symptoms should be crafted such that we can maximize the child's ability to live a normal life.

After an assessment of all variables and diaries a care plan can be introduced. Medication management is often a first line for thought for constipation with Miralax™ being the most commonly prescribed medication. Miralax is not a stimulant laxative and the mechanism of action is different from that of fibers or traditional laxatives. (Table 2) Miralax™ is an osmotic

and will not work effectively if the child has a baseline status of poor fluid intake. It also will not work immediately often taking 2-3 days for intended effect. In some cases, in the patient with Bristol Type I stool and relative poor fluid intake, Miralax™ can cause encopresis. In the case of constipation and relative dehydration, the medication can worsen the constipation and serves as a point of frustration for both the patient and the family.

In Pediatric Urology, we often place hydration at the top of our list for first line management of LUTS and constipation. Providing fluid goals is important as well as strategies to avoid certain beverages such as milk. Consumption of large quantities of milk or dairy products can increase the risks of constipation in children especially when dairy replaces water in the diet. Water is the preferred choice for hydration and goals are given to the family that is individualized for the child by weight or age. (Figure 4) Often it is most effective to use urine color as a measure of hydration and push the child to drink more if the urine is dark or yellow. Improved hydration improves overall GI health and, at the very least, will make therapy with osmotic medications such as Miralax™ more efficacious. Children with LUTS often will limit their fluids as an attempt to decrease the need to urinate but this often serves to worsen symptoms. Many children with LUTS will also be incorrectly diagnosed as having a "small bladder". It is helpful to understand both expected bladder capacity by age or weight and normal hourly urine output before working





the child up for a small bladder. (Table 3) Diagnostic studies can be performed when the child is recalcitrant to simple hydration changes or bowel management. Baseline evaluation involves a urinalysis and, if indicated, a culture. Voided specimens should be a clean catch specimen if the child is voiding.

Extra care should be taken if an underlying problem is suspected. One example is that in females with LUTS, some have concomitant vaginal voiding, which can lead to contaminated specimens. Vaginal voiding occurs when young girls void with their legs together, rush in the bathroom, or have increased pelvic muscle contractions with voiding. Abnormal pelvic muscle tone when voiding can be seen in settings of constipation. The vaginal pooling of urine can cause the parent or provider to mistakenly think the child is having incontinence or even UTI as the urine will be expelled at some point after voiding. The child will then report no "feeling" they needed to urinate which can be confused for incontinence. The vaginal trapping of urine will also cause skin irritation and voiding symptoms including dysuria, foul odor, and, if cultured as part of a voided specimen, can cause an incorrect diagnosis of UTI. This occurs because of the contamination of the voided urine with the irritated perineum or trapped vaginal urine.

In the uncircumcised male, the foreskin must be retracted as far as it can go without pain and the meatus cleansed with a wipe prior to collection of urine. If a specimen is taken through a phimotic foreskin, it will often be contaminated and the resultant growth on a culture can be mistaken for a UTI. A bagged specimen or a specimen taken from cotton balls in the diaper is unreliable to assess for infection and should be considered a contaminated collection and not cultured. This specimen is however, appropriate for a urinalysis. If UTI is clinically suspected a catheterized specimen should be obtained in the nontoilet trained child.

If a concern for a structural problem, a renal and bladder ultrasound can be performed. This is a relatively inexpensive test and does not involve ionizing radiation. Images obtained with a full bladder and immediately after voiding are very helpful for diagnosis. In addition, the subtle nuances such as rectal stool load behind the bladder are often not documented on the report making access to the images imperative for proper evaluation. A CT scan should not be ordered on a child for urologic workup. Often, the diagnostic yield does not justify the radiation exposure in the urologic evaluation of a child. Even in the ER, a CT scan is rarely needed except in the case of a trauma evaluation if the mechanism of injury warrants an evaluation.

Obtaining an abdominal x-ray for evaluation of stool load is not necessary as an initial screening tool. We can easily infer stool load from diaries, history, and clinical examination which includes a rectal exam in some cases. The general principal of avoiding unnecessary ionizing radiation should always be upheld when obtaining studies in the urology patient.

El Paso brings unique challenges to the treatment of children with LUTS and constipation. In addition to concerns regarding food insecurity and patients at risk, we live in an arid and hot environment. Water losses are higher than expected in most cases and the intense summer heat also plays a role. Proactive goal setting with fluids and expected water consumption may prove beneficial in preventing some LUTS from occurring. The conclusion is rather simple, all of us including our children can benefit from drinking more water.

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5) Every student in Texas should access a free school meal. C@R Blog, Health & Nutrition, Op-Ed Dallas Morning News, December 12, 2022.

TABLE 3		
Expected bladder capacity by age	(Age +2)x 30= capacity in ml	
Expected bladder capacity by weight (Use if age <2 and/or <50%tile height and weight)	Weight (Kg) x 7=capacity in ml	
Expected Urine output	1-2ml/kg/hr	





THE FIRST THOUSAND DAYS OF LIFE

Vanessa Ruiz, MD, FAAP, IBCLC

The start to a healthy lifestyle, starts from the day when the child is conceived. The first thousand days of life begins in the womb and ends on the second birthday of the child. This time period is crucial. It is when the child's brain develops the quickest, along with their immune system and their body's growth. The mother's health, nutrition and stress level can affect the child's health in the future. Mothers are encouraged to start making nutritional choices during pregnancy that will benefit them and the baby, since this will help the child's learning, emotional and physical skills to develop adequately.

Once the baby is born, breastfeeding is encouraged due to its long term health benefits to the mother and baby. Around 4-6 months, the pediatrician will advise on the

introduction of complementary foods. For exclusively breastfed babies, the American Academy of Pediatrics (AAP) recommends for babies to start solids at 6 months of age and to continue breastfeeding until the age of 2 years of age.

When choosing which solids to introduce, make sure they have nutritional value and start implementing healthy eating habits that will set the tone for their future. Start by using fresh vegetables and fruits that are cooked to make purees, instead of premade purees. Avoid adding salt or sugar to their purees. Introduce foods one item at a time for 2-3 days in a row in order to detect food allergies. It is important to observe your child for cues that they are satisfied, avoid overfeeding them and allow them to have rest between

feeds. Setting mealtimes to enjoy with their family has a positive effect on children's development.

Parents can establish a strong foundation for their children's health by beginning to eat healthy the moment they become pregnant, by breastfeeding and making the right food choices once the baby begins to have solids. Be the power to influence your child's future! ■

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- 2) www.healthychildren.org



BRAIN INJURY IN THE DEVELOPING BRAIN

Abraham J. Lopez, Ph.D.

There are several well established research findings on brain-behavior that help us understand how the brain reacts and is able to heal as it pertains to injury. A child's brain is able to compensate in several ways and this process is commonly referred to as neuroplasticity. Neuroplasticity is a general theory about the brain and how it is able to reorganize itself as it relates to this particular organ of the body that is very complex and unpredictable. The National Institute of Health (NIH) defines this process as, the capacity of the nervous system to modify itself, functionally and structurally, in response to experience and injury (2017).

It is believed by researchers that brain damage that is sustained early in life may be less debilitating than brain injury experienced later in life as there may be mechanisms that allow for the more immature brain to reorganize itself. This is known as the Kennard Principle. According to this principle, there is a negative linear relation between age at brain injury and functional outcome.

An example of a specific process that has been studied extensively and describes the ability of the brain to adapt in the presence of injury of the left hemisphere of the brain is termed, 'The Crowding Hypothesis'. The Crowding Hypothesis is based on the observation that individuals with left hemisphere brain injury (i.e. temporal lobe epilepsy or traumatic insult to this region of the brain) experience a reorganization of language functions to the right hemisphere.

As we know, the right hemisphere is typically considered to process nonverbal cognitive functions in an undamaged brain. Similar processes are described by the 'Theory of Equipontentiality' which notes that the brain has the capacity to transfer functional memory from the damaged portion of the brain to the undamaged portions of the brain. That is, this theory hypothesizes that other areas of the cortex have a capacity to execute similar processes to carry out functions of areas that have been affected by injury.

AREAS OF FUNCTIONING - LANGUAGE

Language development is heavily influenced by age. The greatest impairments with language are reported for infants under one year of age. From one to five years of age, there is a degree of sparing and some organization occurs to accommodate the development of

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language. Past five years, there is limited reorganization. Rasmussen and Milner (1977) also investigated left hemisphere injury early in life and found that language functions can be transferred to the right hemisphere from the left hemisphere. Overall, many children with left hemisphere unilateral lesions exhibited disorders in speech, writing, or calculation. In comparison, to the adult population, left hemisphere damage in children was found to be shorter in duration. Also, while adults with injury to the left hemisphere demonstrated severe and contrasting evidence of impairment across all measures, none of the deviations are observed in the children with unilateral injury (Bates 2001).

AREAS OF FUNCTIONING - MEMORY

Children with brain injury are less likely to exhibit deficits with implicit memory (unconscious or automatic memory; i.e. riding a bicycle) when compared to explicit memory (i.e. memories we consciously try to recall; i.e recalling a phone number) Children with moderate to severe injury are more likely to show prospective memory deficits (remembering to perform an action; i.e. remembering to take a medicine at night). Overall, long term memory is often less impaired than short term memory.

THE IMPORTANCE OF PROPER TREATMENT

While the brain has a specialized capacity to compensate when there is injury to the brain, a specialized neuropsychological evaluation is imperative as part of treatment planning as other issues may arise. Specifically, there exists occasions in which the immature brain struggles to compensate for an injury. These observations are outlined with Hebb's Early Vulnerability Theory. The theory suggests that brain injury in early development has a less specific effect and a more generalized effect on functioning. Longitudinal studies support functional recovery but with a pattern of deficits over time.

SO WHAT DOES THIS REALLY MEAN?

1. While there is evidence of adaptation of the developing brain when a brain injury has occurred, certain regions of the brain that have become damaged may not develop normally and intellectual capacity may become more apparent over time, which may be due to the brain's processing capacities being affected. Unfortunately, preterm infants continue to experience a high degree of debilitating neurodevelopmental difficulties, even when there is a progressive improvement.

- 2. With an injury, language acquisition in early development experiences a delay, regardless of left or right hemisphere injury.
- 3. In older children and adolescents, the severity of the injury is the major determinant of the sequelae at the time of injury and over time.
- El Paso Children's Hospital provides full comprehensive neuropsychological evaluations that assist is assessing cognitive functions that include memory and attention, academic, or problem solving skills, and emotional concerns.

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12 YEARS LUCHANDO FOR KIDS

We are thrilled to commemorate 12 years of dedicated service as the community's premier pediatric hospital! Throughout the week, our celebration was elevated by the presence of esteemed guests—former WWE superstar Cinta de Oro and UTEP's very own mascot Paydirt Pete. Adding to the festivities were our beloved mascots, Biiip & Ru, who brought smiles to all. This milestone not only marks a journey of excellence in pediatric care but also underscores our unwavering commitment to the well-being of our young patients and their families. As we reflect on the past 12 years, we are filled with gratitude for the trust and confidence the community has placed in us. Here's to many more years of compassionate care, innovation, and continued partnerships with our vibrant community. This is OUR hospital! ■



EL PASO COUNTY RESOLUTION

El Paso Children's Hospital was also honored with a resolution on behalf of the El Paso County Judge and El Paso County Commissioners.

CITY OF EL PASO PROCLAMATION

On February 13, 2024 El Paso Children's Hospital was honored by El Paso Mayor Oscar Leeser and City Council for the work and accolades the hospital has accomplished over the past 12 years.



KTSM CHANNEL 9 NEWS TAKEOVER

El Paso Children's Hospital Day!

We extend our heartfelt gratitude to KTSM 9 News for their generous donation of a full day of broadcast on February 15th! El Paso Children's Hospital took over the airwaves for the day, showcasing the dedication and expertise of our physicians and medical professionals, featuring insightful interviews with Dr. Cindy Stout, our esteemed CEO, Dr. David Yates, Dr. Shumyle Alam, Dr. Jeffrey Schuster, as well as representatives from the EPCH Foundation.

Throughout the day, we had the privilege of sharing our mission, highlighting the impactful work we do, and spreading awareness about pediatric healthcare initiatives in our community. This collaboration with HTSM allowed us to engage with a wider audience, fostering greater understanding and support for our cause.







EL PASO CHILDREN'S HOSPITAL FIRST AND ONLY IN REGION TO PROVIDE COMPLETE COCHLEAR IMPLANT CARE

By Amanda Guillen

Start to finish specialized care under one roof, a dream for so long, now a reality with the development of El Paso Children's Hospital Ear Nose and Throat (ENT) clinic.

El Paso Children's Hospital has reached a significant milestone by becoming the first and only facility in the region to offer comprehensive cochlear implant care, all conveniently located under one roof as part of their Ear Nose and Throat (ENT) clinic. This achievement marks a transformative journey for patients like 2-year-old Josias Valenzuela, who has faced hearing loss since birth. Josias' story epitomizes the hope and progress made possible by the hospital's dedicated team.

Josias' family found solace and direction at El Paso Children's Hospital, where they received prompt assistance and access to hearing aids, a crucial initial step in Josias' treatment. The



hospital's ENT specialists, led by Dr. Jonathan Chiao, along with audiologists Dr. Amanda Chiao, Texas Tech University Health Science Center El Paso and Dr. Manuel Vicente, EPCH, and the rest of their dedicated team offer specialized care covering a 350-mile radius.

For families like the Valenzuelas, the option of cochlear implant surgery represented a beacon of hope for Josias' future. The procedure, performed by Dr. Jonathan Chiao, involved bilateral implantation, a process aiming to equip Josias with two cochlear implants to enhance his auditory capabilities.

Following surgery, Josias underwent the activation process under the guidance of Dr. Amanda Chiao, marking the commencement of a new sensory experience for the young patient. Dr. Amanda Chiao highlighted the significance of the activation process, emphasizing its role in integrating sound into Josias' life and facilitating his journey towards speech comprehension. The successful activation marked the beginning of a lifelong journey, during which Josias will receive ongoing support from his auditory-verbal speech therapist and audiologist to navigate the complexities of sound perception and communication.



The provision of comprehensive cochlear implant care at El Paso Children's Hospital underscores its commitment to addressing the unique needs of pediatric patients with hearing impairments. Dr. Amanda Chiao emphasized the lifelong nature of cochlear implant treatment, emphasizing the enduring impact of the internal implant on patients' ability to hear and communicate effectively.

In conclusion, El Paso Children's Hospital's pioneering efforts in providing complete cochlear implant care represent a significant advancement in pediatric ENT services within the region. Through a dedicated team of specialists and state-of-the-art facilities, the hospital continues to transform the lives of children like Josias, offering hope, support, and the promise of a bright future.



2ND BORDERLAND CEREBRAL PALSY SYMPOSIUM

By Amanda Guillen

We are delighted to highlight the success of the 2nd annual Borderland Cerebral Palsy Symposium, held on Friday, February 9, 2024, at Texas Tech University Health Sciences Center El Paso. This symposium provided a comprehensive overview of cerebral palsy (CP) and its multidisciplinary management, catering to physicians, nurses, therapists, and trainees invested in enhancing CP care outcomes.

Throughout the event, attendees engaged with renowned experts in the field, including

Dr. Freeman Miller, MD, Cerebral Palsy Program Director at Alfred Dupont Hospital for Children, and Dr. Vedant Kulkarni, MD, FAAOS, FAOA, from Shriners Children's Northern California. Our esteemed faculty, comprised of specialists in neurology, orthopedics, therapy, and nursing, shared invaluable insights and strategies for early diagnosis and improved patient outcomes. Participants had the opportunity to earn up to 6 AMA PRA Category 1 CreditsTM and 6 contact hours for nursing professionals. Additional efforts were made to secure

physical and occupational therapy continuing education units, further enriching the learning experience.

Stay tuned for future educational opportunities and events as we remain committed to advancing pediatric care and fostering collaboration among healthcare professionals.





ANNUAL CONGRESS OF JOINT NEONATAL EUROPEAN SOCIETIES

Congratulations to Dr. Sadhana
Chheda MD, FAAP, Cynthia Guevara
MS, RD, CLC, LD, Amanda Timmerman
MS, RD, CSP, CNSC, LD and Gabriella
Mudekunya MS3 for their work on
fortification of feeds in the NICU. They
worked with Drs. Sullivan, Huston
& Lee. This project on "Human
Milk-Based Fortifier Allows Earlier
Fortification without Increased
Risk Compared to Cow Milk-Based
Fortifier" was presented at the annual
Congress of Joint Neonatal European
Societies in Rome, Italy on September
19-23, 2023.

A QUICK VIEW INSIDE OUR NEW 8TH FLOOR!

26 additional monitored beds to include 2-Bed EMU (Epilepsy Monitoring Unit)









- ✓ All 30+ specialists under one roof
- √ 35,000 square foot facility
- ✓ In-house echo, x-ray, ultrasounds, and lab
- √ 50 exam rooms
- ✓ ... and much more!



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