Bowel and Bladder Dysfunction (BBD)

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What is Bowel and Bladder Dysfunction?

Lower urinary tract symptoms (LUTS) and bowel movement disorders

Majority are learned behaviors

GU and GI systems

- similar embryology, innervation, pelvic location and passage through levator ani pelvic floor muscles
- both are impacted by dysfunction
LUT Symptoms

Account for up to 40% of pediatric urology clinic visits

- UTIs and VUR
- Idiopathic urethritis/urethrorrhagia
- Straining to void
- Urinary frequency
  - Increased
  - Decreased
- Urgency
- Diurnal incontinence
- Nocturnal enuresis
- Penile/Vaginal pain/discomfort
- Dysuria without UTI
- Feeling of incomplete emptying
- Hesitancy
- Epididymitis
- Intermittent stream
- Posturing and holding maneuvers

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**Constipation and Encopresis**

**Rome III Criteria**

**Infants to 4 yrs (at least 2 for 1 month)**
- \( \leq 2 \) BM/week
- Encopresis 1x/wk after toilet training
- Excessive stool retention
- Hard painful stools
- Large diameter stools that obstruct the toilet
- Large rectal fecal mass

**Children > 4 yrs (2 or more/month)**
- \( \leq 2 \) BM/week
- Encopresis 1x/wk
- Stool withholding
- Hard painful stools
- Large diameter stools that obstruct toilet
- Large rectal fecal mass

**Prevalence**
- 0.7% - 29.6%
- 3% of PCP visits
- 20-25% of Ped GI visits

**BRISTOL STOOL FORM SCALE**

- **TYPE 1**: Separate hard lumps (hard to pass)
- **TYPE 2**: Lumpy, oblong-shape (must strain to pass)
- **TYPE 3**: Oblong-shape with cracks (potential for straining)
- **TYPE 4**: Like a sausage, smooth and soft (easily passed)
- **TYPE 5**: Soft blobs with clear-cut edges (easily passed)
- **TYPE 6**: Fluffy pieces with ragged edges ( mushy stool)
- **TYPE 7**: Entirely liquid, no solids (expelled with urgency)
Functional constipation and LUTS impact the quality of life, psychosocial and economic well-being of the entire family.

As common as it is, there are no universally accepted diagnostic criteria for BBD.

The mechanism for development of BBD is unclear. Various theories include:

- Compression and obstruction from distended rectum
- Neuromuscular etiology
- Pelvic floor muscular dysfunction
- Behavioral issues and habits
Rectal Distension and LUT Function

Experimental studies show conflicting results
Acute rectal distention affects bladder function in children with LUTS in 3 ways:
  • Inhibitory
  • Stimulatory-most patients
  • No effect
The effects of rectal balloon inflation persisted or progressed in 46% of patients after deflation
How does BBD Happen?
Spontaneous voiding is believed to be a spinal cord reflex
Bladder distension stimulates detrusor contraction and the external sphincter relaxes
Small voided volumes ~20 times/day, approximately once an hour
Bladder emptying is often incomplete
Normal voiding

With neuromuscular maturation, emptying becomes more coordinated and children should void to completion approximately every 2-3 hours.
Normal bowel movements

<table>
<thead>
<tr>
<th>AGE</th>
<th>BOWEL MOVEMENTS PER WEEK</th>
<th>BOWEL MOVEMENTS PER DAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–3 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast-fed</td>
<td>5–40</td>
<td>2.9</td>
</tr>
<tr>
<td>Formula-fed</td>
<td>5–28</td>
<td>2.0</td>
</tr>
<tr>
<td>6–12 Months</td>
<td>5–28</td>
<td>1.8</td>
</tr>
<tr>
<td>1–3 Years</td>
<td>4–21</td>
<td>1.4</td>
</tr>
<tr>
<td>More than 3 Years</td>
<td>3–14</td>
<td>1.0</td>
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</tbody>
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Typical pattern of urinary and bowel control

- Nighttime bowel movement control
- Daytime bowel movement control
- Daytime urine control
- Nighttime urine control
To achieve voluntary independent control of elimination

Sense bladder and rectal fullness

Inhibit voiding and bowel movements until arriving at a socially acceptable place (bathroom)

Pull down clothing adequately or get assistance

Sit or stand to urinate/defecate

Wipe adequately/‘shake’

Pull up clothing
Complex coordination

Drinking
Pooping
Peeing

Home
School or daycare
Sports & activities

How are children supposed to achieve normal habits?
Factors impacting the development or persistence of BBD

HOME

- Lack of adult monitoring
- Distractions (Video games, computer games, TV, playing)
- Poor fluid choices, not enough water intake
- Diet low in fiber, high in constipating foods
- Overscheduling
- Caretakers unaware of ‘normal ‘ drinking, voiding and bowel movement habits
Factors impacting the development or persistence of BBD

SCHOOL

- Urine and stool withholding
- Restrictions and limited access to bathrooms and water
- Lack of privacy in school bathrooms
- Dirty bathrooms
- Bullying
- Peer pressure
- Negative reinforcement (discouraging students, withdrawal of privileges)
- Poor fluid options and choices.
- Inadequate fluid intake
Survey of elementary school teachers

- 30% reported making students wait to go to the bathroom during class
- Almost 50% noted progressively worsening sanitation in the bathrooms during the day
- 42% noticed bullying in the bathroom
- Fewer than 20% suspected underlying health problems in children with frequency, incontinence or encopresis

Cooper, C. JUrol, 2003
Survey of school nurses

48% suspected underlying health problems associated with urinary frequency
33% suspected underlying health problems associated with incontinence and encopresis
61% lacked information about normal elimination
43% had been asked to provide elimination information to teachers
70% were unaware of local providers specially trained to treat children with BBD
Evaluation of BBD
History

Drinking habits
- What, when, how much

Voiding habits
- at home, at school, color of urine in am/pm
- Holding maneuvers (Posturing, grabbing genitalia, sitting with heel on perineum, dancing, crossing legs)

Bowel movements
- Bristol stool scale, Rome III criteria, frequency, straining, pain with defecation, blood with wiping, abdominal pain, encopresis

UTIs
- Fever, symptoms,

Psychological/behavioral issues (ADD/ADHD)

Developmental delays or physical limitations

Family history
Physical examination

Palpable stool
Gaping anus, anal fissures, hemorrhoids
Pooling of urine in vagina
Labial fusion
Stained or damp underwear
Perineal rash
Meatal stenosis
Cutaneous lesions of lumbosacral spine
  • Gluteal cleft anomalies, tufts of hair,
  • sacral dimple
Gait (walking on toes)
Urinalysis/Urine culture

Bladder ultrasound in clinic to assess PVR and stool in rectum
Initial recommendations

Behavior modification/Urotherapy

• Patient/parent education
• Written information on timed drinking and voiding regimen
• Aggressive bowel movement management
• Use alarm watch
Holistic Approach to Treating Wetting and Urinary Tract Infections
WISH Clinic at Children’s National

**Drink** enough water until urine is clear by early afternoon. Stop drinking two hours before bed

**Urinate (Pee)** after waking, every two to three hours during the day, especially at school, and before bed

**Monitor Pooping and Treat Constipation**
- Soft smooth stools daily
- Eat a fiber rich diet; 20-40 grams daily based on age
- Eliminate processed foods, white carbohydrates-pasta, rice, bread, and bagels
- Eat high fiber alternatives-double fiber bread, brown rice
- Limit dairy product intake-cheese, milk, ice cream
- Eat green leafy vegetables-kale, spinach, not iceberg lettuce!
- Eat “P” and “B” fruits-prunes, blueberries, blackberries
- Fruit smoothies, Fruit-Eze spread

**Exercise**

**Maintain normal body weight and BMI**
Bladder and Bowel Dysfunction Risk Factors
WISH Clinic at Children’s National

Poor Voiding Habits (Peeing)
• Not voiding immediately after awakening
• Waiting more than three hours between voids
• Improper toilet position
• Not voiding before bed

Poor Drinking Habits
Not drinking enough water throughout the day/home and school
Drinking caffeinated, carbonated, or high sugar drinks — Soda, Chocolate milk, Coffee, Tea, Energy Drinks, Gatorade, Kool-aid,

Poor Stooling Habits (Pooping)
• Hard, infrequent stools or small, hard pellets
• Large, fat, ‘lumpy’ ‘bumpy’ stools
• Poor fiber intake; not enough fruits and vegetables, whole grains, nuts, or beans
• Straining or not taking enough time to pass stool
• Improper toilet position
Additional initial recommendations

All behavioral issues (ADD/ADHD/defiance) must be addressed simultaneously

Renal/Bladder ultrasound (RBUS)-pre/post void

• Hx of UTIs, diurnal incontinence, straining

KUB
What next???????????
Renal Bladder ultrasound & Refer to Pediatric urologist
UTIs and VUR

• VUR is a risk factor for pyelonephritis and renal scarring
• BBD in patients with VUR
  • Increases the risk of breakthrough UTIs
  • Worsens the severity and likely prolongs resolution
  • May cause recurrence after initial improvement or surgical correction
Culture proven UTI

Febrile and nonfebrile UTIs

- Start timed drinking and voiding
- Discuss bowel movements
- Treat constipation if criteria are met
- RBUS with pre and post void images
- Appointment with a specialist (Pediatric urologist)

- If the RBUS is abnormal or ≥2 episodes of nonfebrile UTI
- If there is a febrile UTI*****
Constipation and Encopresis

Educate patients and parents about diet modifications
WATER! WATER! WATER!
Referral to a nutritionist
Referral to pediatric gastroenterology
Conclusion

BBD involves overlapping symptoms
Most are learned behaviors that evolve over time
Requires a significant time investment
Ideally a multidisciplinary approach should be used
Better information should be given to school staff to encourage better habits