

Pediatric Bladder / Bowel Diary and Elimination Observations
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In the treatment of Pediatric Bowel and Bladder Dysfunction (BBD) "the majority of patients will improve with six months of urotherapy ± biofeedback, adequate fluid intake, and constipation treatment". (Dos Santos 2017, Drzewiecki 2012)

- Voiding and bowel diaries are essential for the initial evaluation of BBD
- 7 to 14 day diaries are recommended especially for nocturnal enuresis (Austin 2016)
- 48 to 72 hour frequency volume diaries provide more reliable information
- Most reliable if observed by an adult, or after age 7

Free bladder diary apps (not specific to pediatrics) were reviewed in 2019 by Heidi Moosdorff-Steinhauser PT. Link to her blog post review <https://www.pelvicnewschannel.com/what-is-best-free-bladder-diary-app/>

Seven outcome questionnaires have been reviewed by Jiang 2018. None perfect.
The Dysfunctional Voiding Score System (DVSS) (Farhat 2000) example on my web site

Fluid input: amount, time, type

- Great variety of suggested normal
 - Toddlers: 60 to 120 ml
 - 4-8 years: 150 ml
 - 9-13 years: 210 to 240 ml
- Water is best, Consider irritants and sugar
- Spaced evenly throughout the day, decrease 2 hours before bed

Urine output: volume, time

- Maximum voided volume (MVV) should correlate with Expected Bladder Capacity (EBC)
- Expected bladder capacity (EBC)
 - $(age + 2) \times 34.4 = EBC$ in ml (Palmer 1977)
 - example for a 5 year old child $(5 + 2) \times 34.4 = 240.8$ ml = 8 oz
 - Children over age 2 - $(age \text{ divided by } 2) + 6 = EBC$ in ounces (Kaefer 1997)
 - example for a 5 year old child $(5/2) + 6 = 8.5$ oz = 255 ml
 - Some concerns on accuracy
 - Can be used up to 12 to 14 years old
 - 12 year old should have a bladder capacity of 420 ml
 - Small maximum voided volume – less than 65% of EBC
 - Large maximum voided volume – more than 150% EBC
- Day time frequency – number of voids during waking hours - between 4 and 8
 - Increased day time frequency – more than 8
 - Decreased day time frequency – 3 or less
- Self - initiated elimination vs parent initiated
 - Child "Do you feel when you need to go?"
 - Parent "Does your child need prompting to void?"

- Nocturia - night time voids after age 5, normal = 0, common in school aged children
- Nocturnal enuresis: frequency, amount, cause
 - Urge at time of leakage
 - Wet clothing
 - Is child aware of urine loss
 - Time of night leak
- Do you get enough sleep at night?
- Do you wake up to go to the bathroom at night?
- Are you afraid of the dark?
- Bowel movements - Bristol stool chart
- Encopresis - bowel leakage
- Protective padding/pull-ups - type, number per day, weight
 - 12-hour pad test (Hellstrom 1986): hard due to parent compliance
 - Weight of wet pad / diaper minus weight of dry pad / diaper

Elimination Observations (Austin 2016)

- Urgency – sudden unexpected need to urinate, after age 5
- Hesitancy – Slow initiation of void after age 5
- Straining – Abdominal pressure during void, all ages
- Intermittency – bursts of urine during voiding, physiological up to age 3 if no straining, after 3 is always considered dysfunctional "Does the urine come out in a single stream or is it interrupted?"
- Feeling of incomplete emptying – relevant from adolescents on
- Post micturition dribble – leak after void, after age 5
- Dysuria - Genital pain – not reliable in children "Are there any signs of pain with voiding or bowel movements?" "Do you have pain when you go?"
- Holding maneuvers – strategies to post pone voiding, after age 5 "Does your child exhibit holding maneuvers?"
 - Includes – standing on tip toes, crossing legs (St Vincent's curtsy), and placing heel into the perineum (Berry 2005)
 - Children with OAB who use posturing maneuvers to avoid incontinence are at high risk for UTIs (Hellerstein 2003)
 - Longstanding postponement of voiding characterized by (Berry 2005)
 - Infrequent and incomplete voiding
 - Little urge to void
 - Larger than normal bladder capacity
 - Underactive bladder with abdominal straining
- Toilet position - Is it a high or low toilet? Feet dangling?
- Patterns during school
 - Does anyone at school (kids) know about your bladder or bowel problem?
 - Do you have enough time to go?
 - Can you go to the bathroom when you need to go at school or do you have to wait until a break?
 - Do you feel you have privacy? Do you feel you need more privacy?

Pediatric Urinary Diagnosis

Most frequent subtypes of bladder dysfunction

- Monosymptomatic nocturnal enuresis (MNE)
- Overactive bladder (OAB)
- Dysfunctional voiding (DV)

Nocturnal incontinence - nocturnal enuresis or enuresis or bedwetting

- Primary enuresis
- Secondary enuresis

Overactive Bladder (OAB)

- Urinary urgency and increased urinary frequency with or without UI
- Most common type of pediatric BBD
- UI / Enuresis - Uncontrollable urine leakage from age 5 or attainment of bladder control

Dysfunctional voiding (DV) (Dos Santos 2017)

- “children who contract the urethral sphincter during voiding.”
- Associated with constipation and/or encopresis.
- Staccato uroflow pattern - most common
- Interrupted or mixed flow pattern possible
- Key to perform simultaneous pelvic floor electromyography (EMG) during an uroflow

Vaginal reflux (previously called vesicovaginal entrapment)

- UI of a moderate amount about 20 min after voiding
- Toilet trained, obese, teen aged girls
- Void gets trapped in labia and goes into vagina
- Symptoms include external vaginal irritation and vaginal odor
- Decreased if legs are spread during urination – sit backwards on the toilet

Giggle UI (old term Enuresis Risorica)

- Complete voiding during or immediately after laughing
- Should be differentiated from OAB, Postponement, or underactive bladder
- OAB induced by laughter (Chandra 2002)
- “The emotional change precipitates alteration of PFM tone, causing sudden weakness or paralysis” (cataplexy) (Feldt 2006)
- Often resolves by adulthood (Ellsworth 2008)

Underactive bladder (UB) (Dos Santos 2017)

- Decreased voiding frequency (2–4 times daily)
- Straining during micturition - bend over or push the abdomen
- Symptomatic UTI or asymptomatic bacteriuria
- Dribbling, Enuresis
- Constipation/encopresis
- Interrupted uroflow pattern with a large post-void residual (PVR)

Resources

International Children's Continence Society (ICCS) <http://i-c-c-s.org/>
Parent resource <http://i-c-c-s.org/parents/>

References

- Austin PF, et al. The Standardization of Terminology of Lower Urinary Tract Function in Children and Adolescents: Update Report From the Standardization Committee of the International Children's Continence Society. *Neurourol Urodyn* . 2016 Apr;35(4):471-81.
- Berry A. Helping children with dysfunctional voiding. *Urol Nurs*. 2005;25(3):193-201.
- Chandra M, Saharia R, Shi Q, Hill V. Giggle incontinence in children: a manifestation of detrusor instability. *J Urol*. 2009; 5: 2184-2187.
- Dos Santos J, et al. Bladder and Bowel Dysfunction in Children: An Update on the Diagnosis and Treatment of a Common, but Underdiagnosed Pediatric Problem. *Can Urol Assoc J* . Jan-Feb 2017;11(1-2Suppl1):S64-S72.
- Drzewiecki BA, et al. Use of Validated bladder/bowel Dysfunction Questionnaire in the Clinical Pediatric Urology Setting. *J Urol* . 2012 Oct;188(4 Suppl):1578-83.
- Ellsworth P, Caldamone A. Pediatric voiding dysfunction: current evaluation and management. *Urol Nurs* 2008;28(4):249-257.
- Fathat W, et al. The Dysfunctional Voiding Scoring System: Quantitative Standardization of Dysfunctional Voiding Symptoms in Children. *J Urol* . 2000 Sep;164(3 Pt 2):1011-5.
- Feldt CM. Pediatric Therapy. In: Carriere CM, *The Pelvic Floor*. New York: Thieme; 2006.
- Hellerstein S, Linebarger JS. Voiding dysfunction in pediatric patients. *Clin Pediatr*. 2003;42:43-49.
- Hellstrom AL, Andersson K, Hjalmas K, Jodal U. Pad tests in children with incontinence. *Scand J Urol Nephrol*. 1986;20:47-50.
- Jiang R, et al. Assessment of Pediatric Bowel and Bladder Dysfunction: A Critical Appraisal of the Literature. *J Pediatr Urol* . 2018 Dec;14(6):494-501.
- Kaefer M, et al. Estimating Normal Bladder Capacity in Children. *J Urol* . 1997 Dec;158(6):2261-4.
- Neveus T, et al. The Standardization of Terminology of Lower Urinary Tract Function in Children and Adolescents: Report From the Standardization Committee of the International Children's Continence Society (ICCS), *Neurourology and Urodynamics* 26:90;102 (2007)
- Palmer LS, et al. Age related bladder capacity and bladder capacity growth in children with myelomeningocele . *J Urol* 1997;158:1261-1264.