Stop the Leak!

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Pelvic health certified therapist
Therapeutic Pain Specialist
Certified, hybrid learning & teaching

EIM Evidence In Motion

Urinary Incontinence

Who, what, when, where, why?

- Impacts over 13 million Americans
- Only 1 in 12 report to a healthcare provider
- On average, people wait 3-6 years to report

Prevalence

- 2nd leading cause of institutionalization in the elderly
- Over 50% of nursing home residents have a form of incontinence
- Up to 57% of women ages 35-74
- 51% of elite female athletes (especially in sports involving a ball)
- 20% of recreational athletes report dropping out of their preferred sport/exercise due to incontinence
- 11-34% of men > 45
- Most common cause of visits to a pediatrician in children between the ages of 5-10

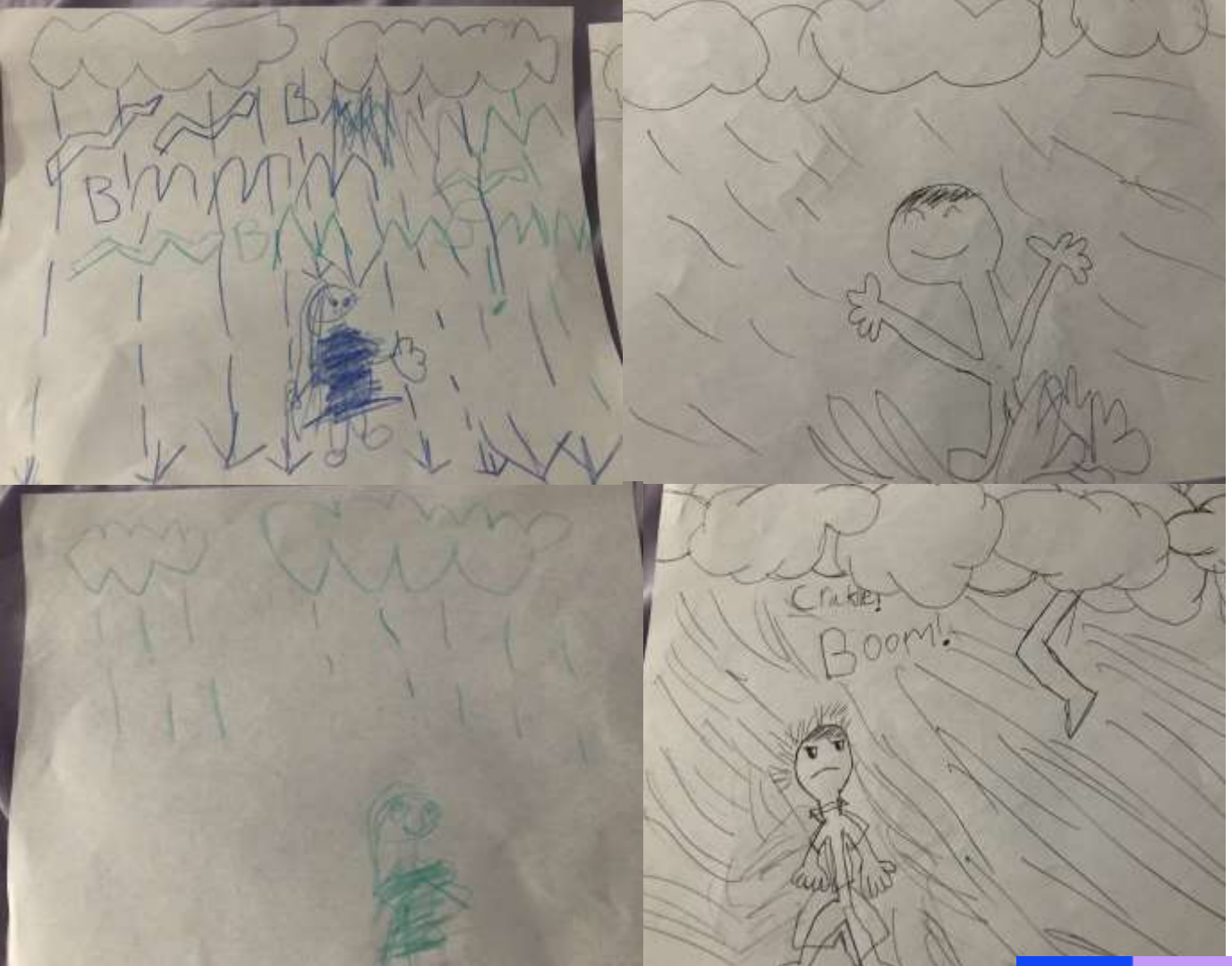
Meddings et al. Systematic review of interventions to reduce urinary tract infection in nursing home residents. *Journal of Hospital Medicine*. 2017: 12(5). 356-368.

Shah et al. Continence and micturition: an anatomical basis. Clinical Anatomy. 2014: 27(8). 1275-1283.

Risk Factors

That We Know Of…

- Bowel dysfunction
- Jobs where regular bathroom breaks are difficult (teachers, nurses, bus drivers)
- Exercise, especially high impact exercise
- History of abdominal surgery
- History of back or hip surgery
- History of prolonged bedwetting as a child
- Increased age (hormone changes)
- Diabetes
- Stroke
- Smoking
- Diuretics, ACE inhibitors
- Depressions
- Progressive neurologic condition
- Prolonged catheter use
- Nerve damage (post prostatectomy)



Urinary Incontinence

What exactly is it?

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Red Flags

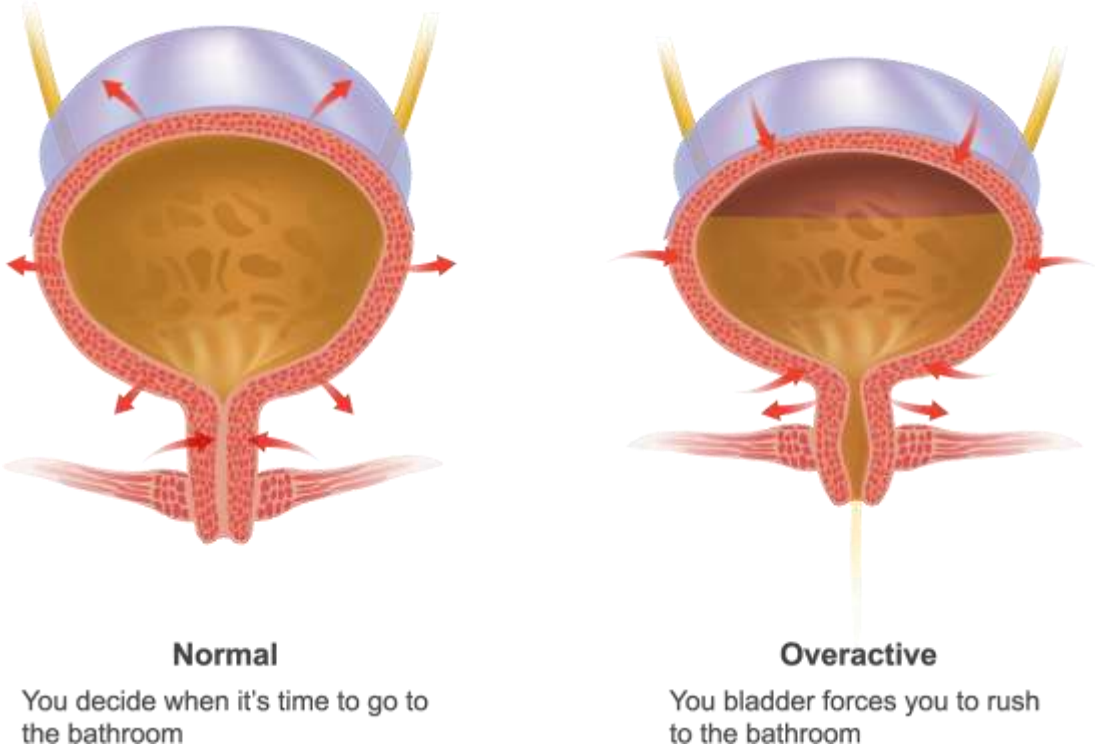
Genitourinary function

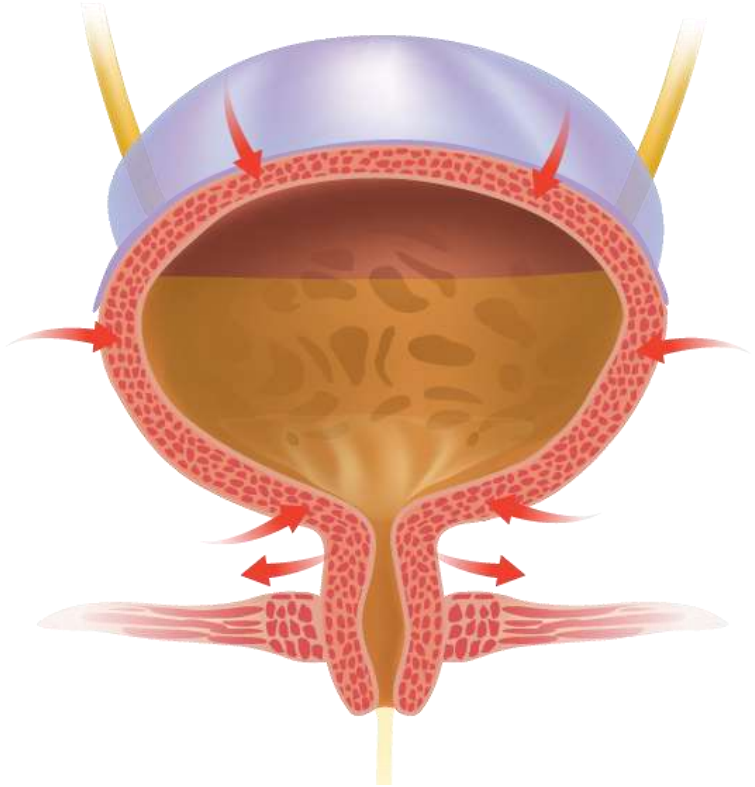
- Sudden unexplained change in urinary function
- Unusual discharge, especially with an odor
- Significant pain associated with or immediately prior to/after urination
- Blood
- Inability to urinate adequately combined with leaking
- Leaking without sensation/knowledge

Anatomy & Physiology

Continence is a Musculoskeletal/Neuromuscular Function

- I promise!
- Detrusor
- Pelvic floor

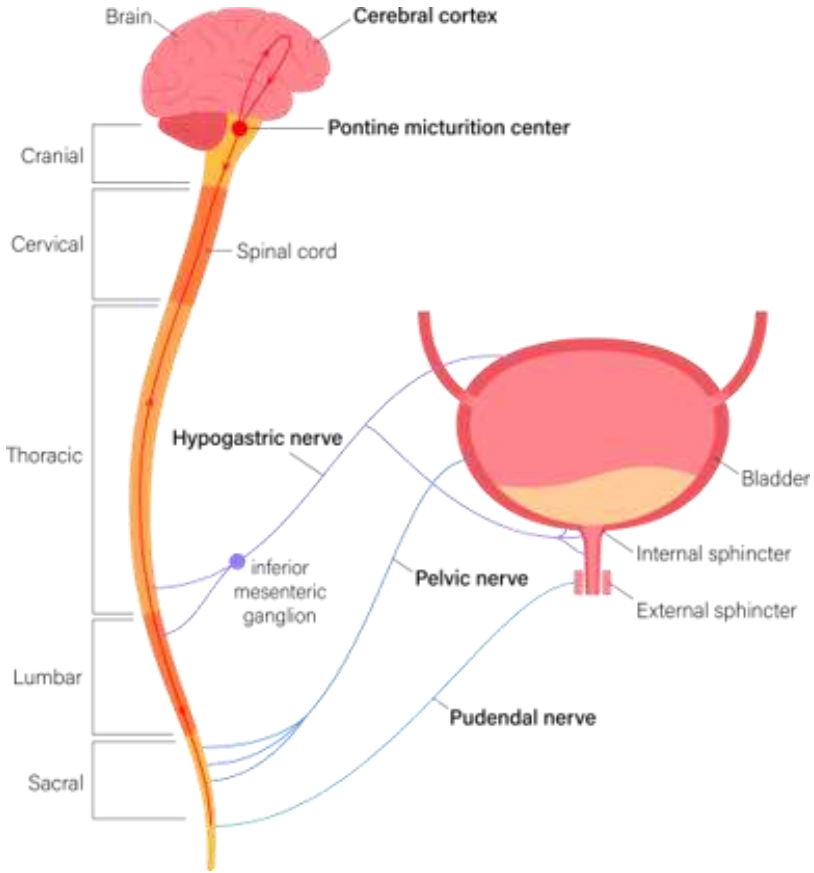




Bladder

- Stores urine (hollow, made of muscle)
- Rugae (tiny wrinkles) on inner lining allow the bladder to expand as it fills
- From the bladder “down,” considered the lower urinary tract
- Held in place by ligaments attached to other organs, the bony pelvis, and the pelvic floor
- Normal capacity: 600-800 mL
- Normal residual volume: 20-25 mL (anything > 50 mL considered retention)

Arya and Weissbart. Central control of micturition in women: brain-bladder pathways in continence and urgency urinary continence. Clinical Anatomy. 2017: 30(3): 373-384.



Lower Urinary Tract

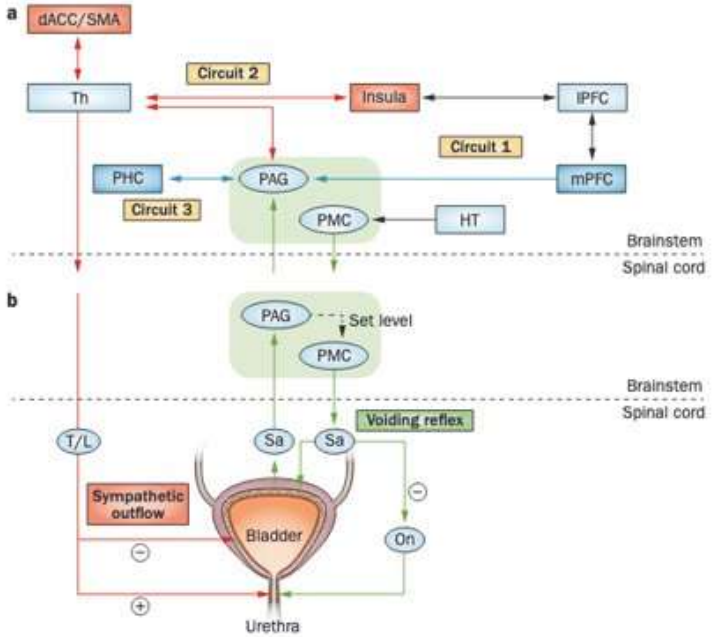
- Voluntary control of the lower urinary tract is a complex relationship between the autonomic (sympathetic and parasympathetic nerves) and somatic (pudendal nerve) pathways
- Two Phases
  - Filling/Collection Phase
  - Micturition: bladder emptying

Arya and Weissbart. Central control of micturition in women: brain-bladder pathways in continence and urgency urinary continence. Clinical Anatomy. 2017: 30(3). 373-384.

Sympathetic Innervation: Detrusor Inhibition

Sympathetic Innervation: T10-L2

- Bladder distention produces low level vesical afferent firing (pelvic and hypogastric nerves)
- Stimulates sympathetic outflow via the hypogastric nerve to the bladder and urethral smooth muscle
- Stimulates pudendal outflow to the striated part of the urethral sphincter



Griffiths, D. Neural control of micturition in humans: a working model. *Nat Rev Urol.* 2015; 12(12):695–705. https://doi.org/10.1038/nrurol.2015.266

Parasympathetic Innervation: Detrusor Activation

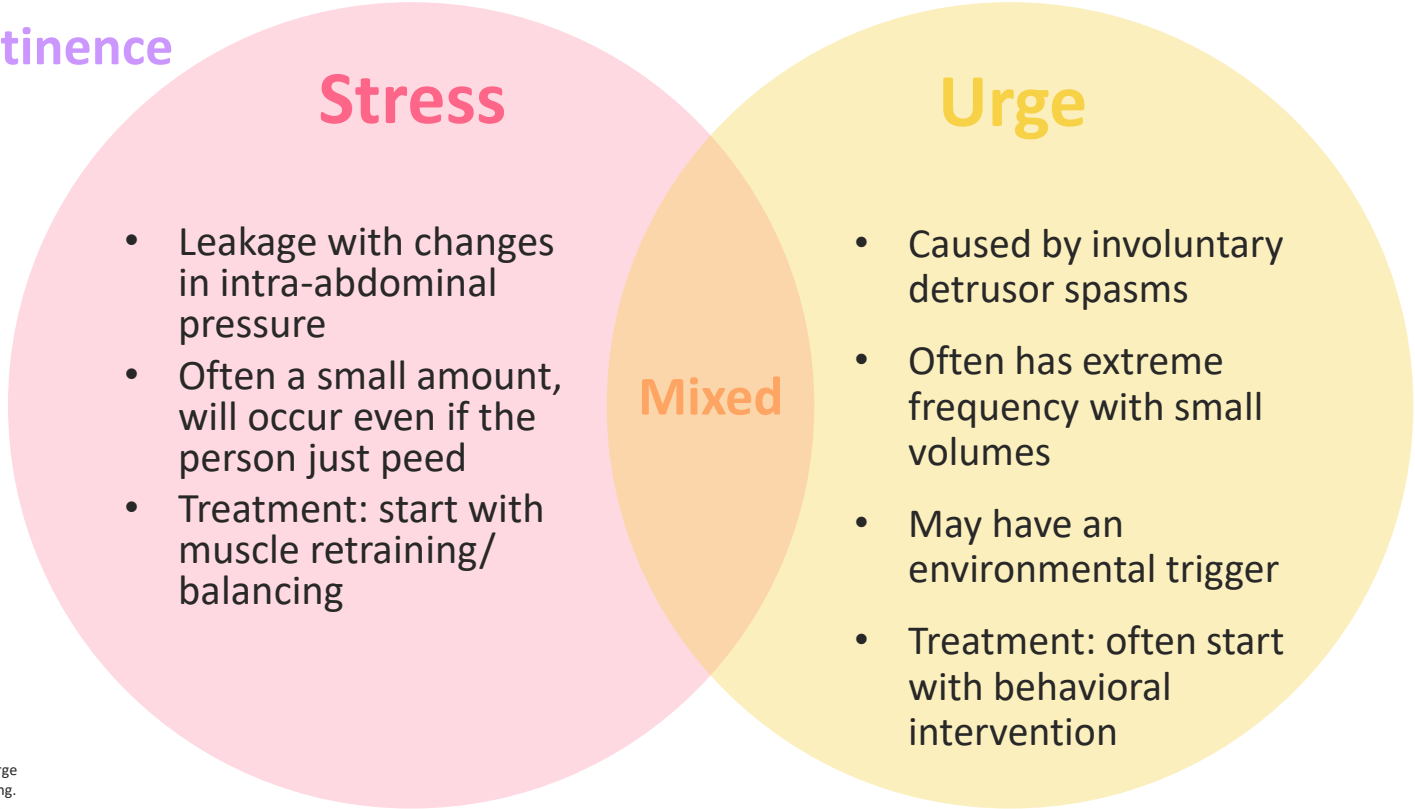
- Sensation of bladder fullness is conveyed to the spinal cord via the pelvic and hypogastric nerves
- Stimulates parasympathetic outflow to the bladder and urethral smooth muscle
- Inhibits the sympathetic and pudendal outflow to the urethra outlet

The Pelvic Floor and LUT

- The pelvic floor plays an integral part in the lower urinary tract storage and evacuation
- Normal urine storage necessitates that continence be maintained with normal urethral closure and urethral support
- The endopelvic fascia of the anterior vaginal wall, its connection to the arcus tendineous fascia pelvis (AFTP), and the medial portion of the levator ani muscles must remain intact to provide normal urethral support

Urinary Incontinence

Types of Incontinence



Griffiths and Tadic. Bladder control, urgency, and urge incontinence: evidence from functional brain imaging. Neurourological Urodynamics. 2008: 27(6). 466-474.

PT Evaluation

What Structures Are Involved?

- Thoracic spine
- Hips
- Lumbar spine
- Nervous system
- Pelvic floor
- Core stabilization system

Where do I Start??

With an ask!

- Data says patients don't bring this up…because they fear embarrassing their healthcare provider
- A simple question: "Do you ever have involuntary leakage of urine, even if it's only a few drops?" goes a long way!
- When does it happen?
  - Coughing/sneezing/laughing/jumping ->stress
  - On the way to the bathroom, when I pull into my garage ->urge
- Ask if their continence has any relationship to what you are seeing them for-the answer may surprise you!

Classic PT answer: It depends!

Classic PT answer: It depends!

- What kind of incontinence?
- What triggers it if anything?
- What functional movement patterns did you see?
- Where does it fit in the context of the other things you are treating?

Watch Your Patient Move!

Specifically, watch them breathe!

PT Treatment Strategies

Neuromotor Retraining

- Restore the Balance-especially for people who have stress incontinence
- Intra-abdominal pressure regulation
- Breathing
- Down regulating overactive musculature

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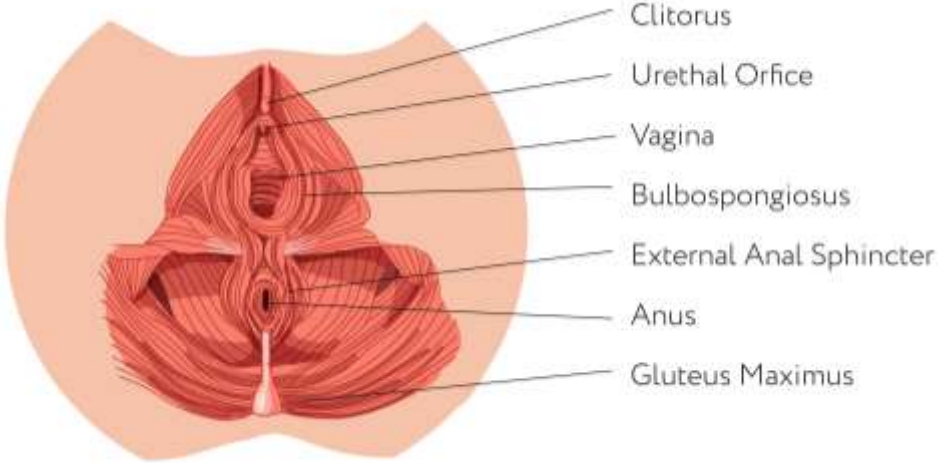
Neuromotor Retraining

- Train variability in positions and movement
- The pelvic floor is NOT a static hold muscle!
- Eccentric elongation needs to be just as (if not more) controlled as concentric shortening
- Elevator (pauses/control)
- Use positions that activate the pelvic floor (balance!)
- Ideal scenario: teach it to do its thing WITHOUT a volitional request
- Type of muscle fiber and type of muscle activation practice

Neuromotor Retraining

What about higher level activities?

- Start with slower/lower impact movements and very volitional breath/PF control
- “Blow before you go” for weight lifting or slower movements
- Move into faster/more impactful movements and automatic PF control
- Ex: physioball progression into running
- Use weight shifts to bias toward front or back of pelvic floor
- “Front loading” to bias toward urogenital triangle
- Running progression with forward bias/ wall lean



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Neuromotor Training

Additional Tools

- Training impact
- Training endurance
- Use of aids
- Vaginal weights
- Activity/sport specific training!

Manual Therapy

Where does continence come from? What needs appropriate mobility?

- Abdomen
- Spine (don’t forget thoracic spine-breathing & parasympathetic chain ganglion)
- Rib cage
- Lumbar spine
- Hips
- Pelvic floor

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Stretching

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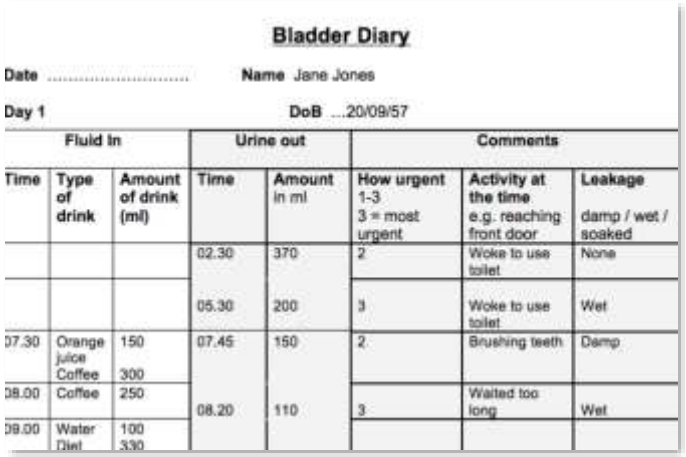
Lifestyle Assist

Eliminate/Minimize Irritants

- Common culprits: dairy, citrus, chocolate, caffeine, alcohol, urine that is too concentrated
- Intake/output diary is your best bet to identify
- Food may be just as likely as fluid

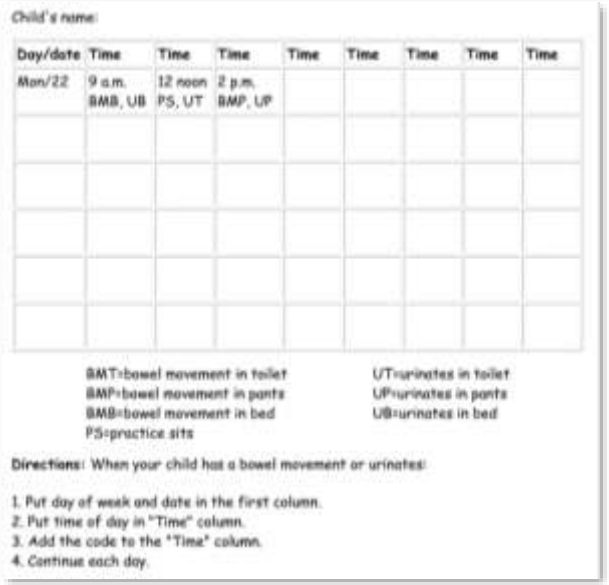


Bladder Diary

Date ..... **Name** Jane Jones

Day 1 **DoB** ...20/09/57

Fluid In			Urine out		Comments		
Time	Type of drink	Amount of drink (ml)	Time	Amount in ml	How urgent 1-3 3 = most urgent	Activity at the time e.g. reaching front door	Leakage damp / wet / soaked
			02.30	370	2	Woke to use toilet	None
			05.30	200	3	Woke to use toilet	Wet
07.30	Orange juice Coffee	150 300	07.45	150	2	Brushing teeth	Damp
08.00	Coffee	250	08.20	110	3	Waited too long	Wet
09.00	Water Diet	100 330					



Child's name:

Day/date	Time	Time	Time	Time	Time	Time	Time	Time
Mon/22	9 a.m. BMB, UB	12 noon PS, UT	2 p.m. BMP, UP					

BMT=bowel movement in toilet
BMP=bowel movement in pants
BMB=bowel movement in bed
PS=practice sits

UT=urinates in toilet
UP=urinates in pants
UB=urinates in bed

Directions: When your child has a bowel movement or urinates:

1. Put day of week and date in the first column.
2. Put time of day in "Time" column.
3. Add the code to the "Time" column.
4. Continue each day.

Bradley et al. Evidence for impact of diet, fluid intake, caffeine, and tobacco on lower urinary tract symptoms: a systemic review. *Journal of Urology*. 2017: S0022-S5347.

Griffiths and Tadic. Bladder control, urgency, and urge incontinence: evidence from functional brain imaging. *Neurourological Urodynamics*. 2008: 27(6). 466-474.

Lifestyle Assist

Drink more water!

- How to decide how much?
- Timing of fluid intake

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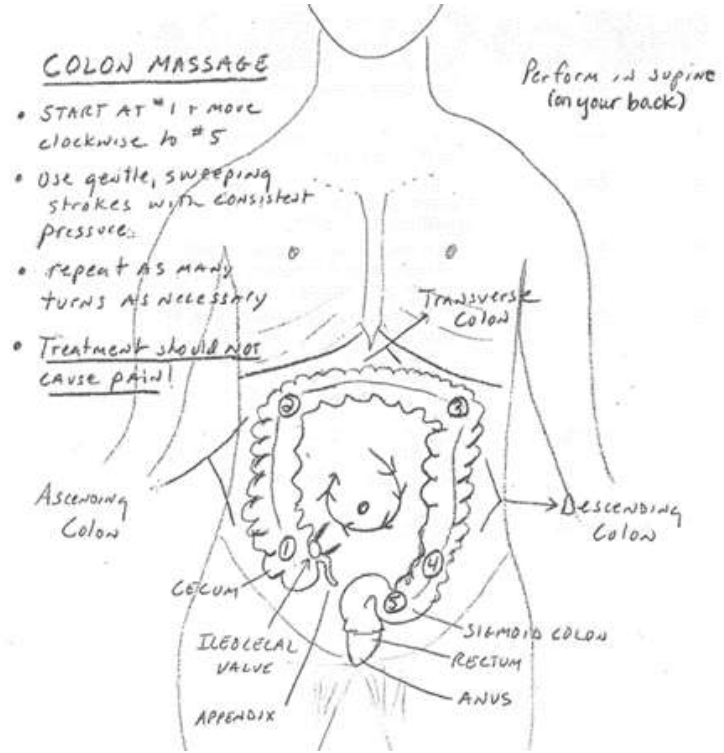
Address Constipation

If present (you need to ask!)

TYPE 1	RABBIT DROPPINGS	Separate hard lumps	SEVERE CONSTIPATION
TYPE 2	BUNCH OF GRAPES	Lumpy and sausage like	MILD CONSTIPATION
TYPE 3	CORN ON THE COB	A sausage shape with cracks in the surface	NORMAL
TYPE 4	SAUSAGE	Like a sausage or snake, smooth and soft	NORMAL
TYPE 5	CHICKEN NUGGETS	Soft blobs with clear-cut edges	LACKING FIBER
TYPE 6	PORRIDGE	Mushy consistency with ragged edges	MILD DIARRHEA
TYPE 7	GRAVY	Liquid consistency with no solid pieces	SEVERE DIARRHEA



Urge Suppression

For patients who are having issues with urgency/frequency

- Normal urinary frequency-approximately 6-8 times in 24 hours, none of them overnight
  - Urgency can come with frequency or be due to too infrequent of voids
- Can be behavioral or due to medications or bladder spasms/overactivity or lack of abdominal mobility (or severe constipation, especially in children)
- Step 1: regulate the CNS! Stop and breathe!
- Step 2: distraction-manual, mental, etc.
- Step 3: mindfulness/reassess: do you actually have to go?
  - If yes-go
  - If no-move on with your day

Timed Voiding

To expand length of time between voids OR decrease voiding urgency

- What does the person need? Do they ignore their bladder or is their bladder too prevalent in their lives?
- Only works if they stick with it STRICTLY for a while-only start if people can really commit to the process
- Combine with urge suppression
- Set a time goal and STICK WITH IT
  - Choose an amount of time that they can be successful with at least 90% of the time
  - Increase after 3 days of no accidents

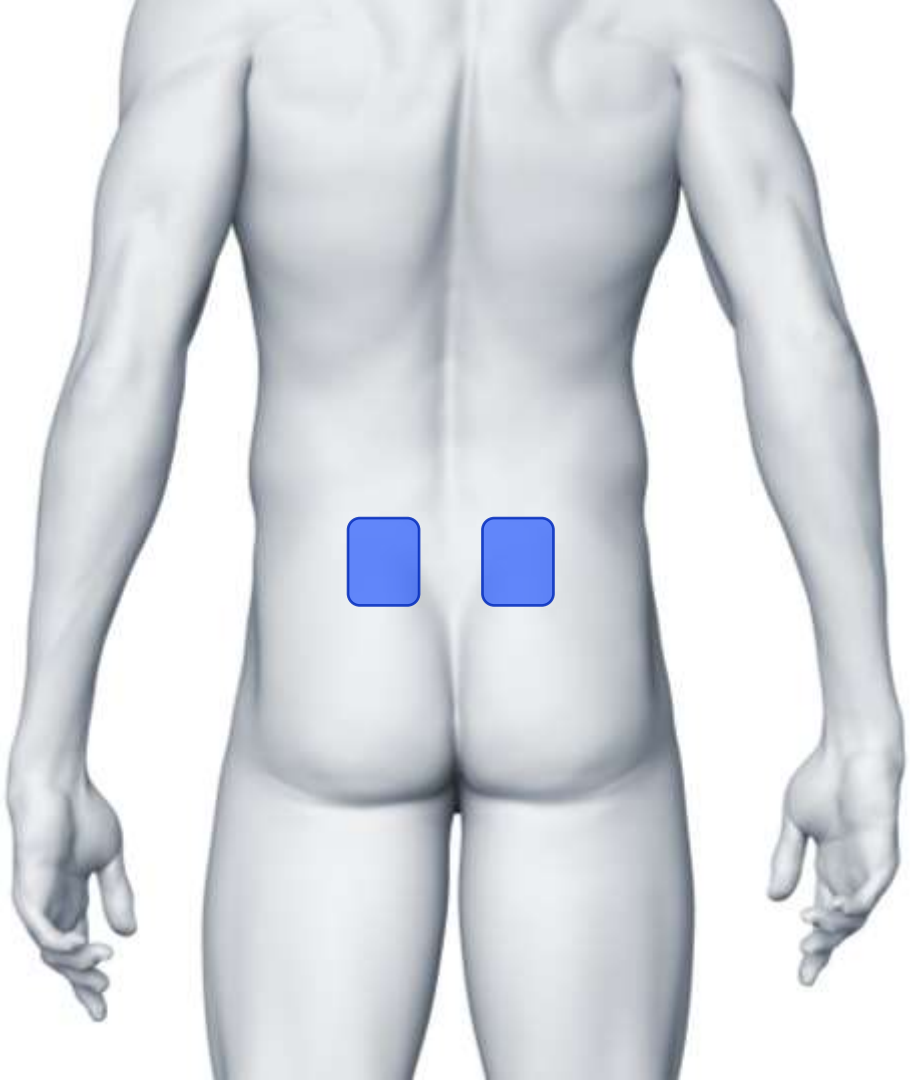
Kinesiotaping

- Kinesiotaping to cue for accurate bladder sensations and appropriate bladder reflexes
- Kraczy, significant decrease in number of episodes following tape application x 4 days

Kraczy et al. Evaluation of applying kinesiotaping in children with urinary incontinence. Journal of Pediatric Urology. 2018. 1e1-1e6

Tens for Overactive Bladder

- 20 minutes twice daily 3 times per week for at least a month
- Pulse width 200
- Pulse rate 10 Hz
- Kajbafzadeh, 50-70% improvement in daytime enuresis



Questions?

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